MX8 Reference Guide

E-EQ-MX8RG-H

2010 Copyright© by LXE®, Inc, An EMS Technologies Company. All Rights Reserved.

Notices

LXE Inc. reserves the right to make improvements or changes to published MX8 information at any time without notice. While reasonable efforts have been made in the preparation of this publication to assure its accuracy, LXE assumes no liability resulting from any errors or omissions in this publication, or from the use of the information contained herein. Further, LXE Incorporated, reserves the right to revise this publication and to make changes to it from time to time without any obligation to notify any person or organization of such revision or changes.

Trademarks

Copyright © 2010 by LXE Inc., An EMS Technologies Company, 125 Technology Parkway, Norcross, GA 30092 U.S.A. (770) 447-4224

LXE® and **Spire**® are registered trademarks of LXE Inc.

RFTerm® is a registered trademark of EMS Technologies, Norcross, GA.

Microsoft®, ActiveSync®, MSN, Outlook®, Windows®, the Windows logo, and Windows Media are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries.

Intel and Intel XScale are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

Summit Data Communications, Inc. Summit Data Communications, the Summit logo, and “The Pinnacle of Performance” are trademarks of Summit Data Communications, Inc.

The **Cisco** Square Bridge logo is a trademark of Cisco Systems, Inc.; Aironet, Cisco and Cisco Systems are registered trademarks of Cisco Systems, Inc. and/or its affiliates in the United States and certain other countries.

Java® and Java-based trademarks and logos are trademarks or registered trademarks of Sun Microsystems, Inc. in the U.S. or other countries, and are used under license.

The **Bluetooth**® word mark and logos are owned by the Bluetooth SIG, Inc. and any use of such marks by LXE, Inc. is under license.

PowerScan is a registered trademark of Datalogic Scanning, Inc., located in Eugene, OR.

Symbol® is a registered trademark of Symbol Technologies. **MOTOROLA**® and the Stylized M Logo are registered trademarks of Motorola®, Inc.

Hand Held® is a registered trademark of Hand Held Products, Inc., located in Skaneateles Falls, NY.

When any part of this publication is in PDF format: “Acrobat ® Reader Copyright © 2010 **Adobe** Systems Incorporated. All rights reserved. Adobe, the Adobe logo, Acrobat, and the Acrobat logo are trademarks of Adobe Systems Incorporated” applies.

Other product names mentioned within this publication may be trademarks or registered trademarks of other companies.

Table of Contents

Introduction 1
- Components 2
  - I/O Port and Cables 3
  - Scanner / Imager Aperture 5
  - Handle 5
  - Handstrap 6
  - Keypads 7
- MX8 Troubleshooting 9

Hardware 10
- System Hardware 10
  - 802.11b/g and a/b/g Wireless Client 10
  - Central Processing Unit 10
  - System Memory 11
    - Internal Mini SD Memory Card 11
  - Video Subsystem 11
  - Power Supply 11
  - COM Port 12
    - RS-232 Serial Port 12
    - USB Client Port 12
    - Audio Headset Connection 12
  - Audio Support 12
  - Scanner / Imager Port 13
  - Bluetooth LXEZ Pairing 13
  - Keypads 14
    - Using the Triple-Tap Keypad 14
    - Using the Alpha-Mode Keypad 15
  - Display 16
    - Display Backlight Timer 16
  - Status LEDs 16

Power 18
- Power Modes 18
  - On Mode 18
  - Suspend Mode 19
  - Off Mode 19
- Batteries 20
  - Checking Battery Status 20
  - Main Battery Pack 20

Battery Hotswapping ... 20
Low Battery Warning ... 21
Backup Battery ... 21
Handling Batteries Safely ... 21
Software ... 22
Operating System ... 22
Windows CE 5.0 Operating System ... 22
General Windows CE Keyboard Shortcuts ... 22
Warmboot ... 23
Coldboot ... 23
Clearing Persistent Storage / Reset to Default Settings ... 24
Reset Registry ... 24
Reset All ... 24
Folders Copied at Startup ... 25
Saving Changes to the Registry ... 26
Software Load ... 27
Software Applications ... 27
Bluetooth (Optional) ... 27
Java (Optional) ... 27
LXE RFTerm (Optional) ... 27
Avalanche ... 28
MX8 Utilities ... 28
LAUNCH.EXE ... 28
LAUNCH.EXE and Persistent Storage ... 29
REGEDIT.EXE ... 29
REGLOAD.EXE ... 29
REGDUMP.EXE ... 30
WARMBOOT.EXE ... 30
WAVPLAY.EXE ... 30
MX8 Command-line Utilities ... 30
COLDBOOT.EXE ... 30
PrtScrn.EXE ... 30
API Calls ... 30
Access Files on the Flash Card ... 30
Desktop ... 31
My Device Folders ... 32
Wavelink Avalanche Enabler (Optional) ... 33
Internet Explorer ... 33
Start Menu Program Options ... 34

Communication ... 35
ActiveSync ... 35
Connect ... 35
Start FTP Server / Stop FTP Server ... 35
Microsoft File Viewers ... 35
Java (Optional) ... 35
Summit ... 35
Certs ... 36
Command Prompt ... 36
eXpress Scan ... 36
Internet Explorer ... 36
Media Player ... 37
Microsoft Wordpad ... 37
Remote Desktop Connection ... 37
Transcriber ... 37
Windows Explorer ... 37
Taskbar ... 38
General Tab ... 38
Advanced Tab ... 39
Taskbar Icons ... 40
Using ActiveSync ... 42
Introduction ... 42
Initial Setup ... 42
Connect via USB ... 43
Cable for USB ActiveSync Connection: ... 43
Connect and Communicate ... 44
Cable for Serial ActiveSync Connection ... 44
Wireless Connection ... 45
Synchronizing from the Mobile Device ... 45
Explore ... 45
Backup Data Files using ActiveSync ... 46
Prerequisites ... 46
Serial Port Transfer ... 46
USB Transfer ... 46
Connect ... 46
Disconnect ... 47
Troubleshooting ActiveSync ... 48
Cold Boot and Loss of Host Re-connection ... 48
Control Panel Options ... 49
About ... 51

Version Tab and the Registry 51
Language and Fonts 51
Identifying Software Versions 52
MAC Address 52
About LXE 52
Accessibility 53
Administration - for AppLock 54
Introduction 54
Setup a New Device 55
Administration Mode 56
End User Mode 57
Passwords 57
End-User Switching Technique 58
Using a Stylus Tap 58
Using the Switch Key Sequence 58
Hotkey (Activation hotkey) 59
End User Internet Explorer (EUIE) 59
Application Configuration 60
Application Panel 61
Launch Button 63
Auto At Boot 64
Auto Re-Launch 65
Manual (Launch) 66
Allow Close 67
Match 68
Security Panel 69
Options Panel 70
Launch timeout 70
Replace timeout 70
Restart timeout 70
Status Panel 71
View 71
Log 72
Save As 72
Troubleshooting AppLock 72
Battery 73
Bluetooth 74
Bluetooth Devices 75
Discover 76
Bluetooth Device Menu 77

Bluetooth Device Properties ... 78
Settings ... 79
Turn Off Bluetooth Button ... 79
Report when connection lost ... 79
Report when reconnected ... 80
Report failure to reconnect ... 80
Computer is connectable ... 80
Computer is discoverable ... 80
Prompt if devices request to pair ... 81
Continuous search ... 81
Computer friendly name ... 81
About ... 82
Using Bluetooth ... 83
Initial Use ... 84
Subsequent Use ... 84
Bluetooth Indicators ... 85
Bluetooth Barcode Reader Setup ... 86
Introduction ... 86
MX8with Label ... 87
MX8 without Label ... 88
Bluetooth Beep and LED Indications ... 89
Easy Pairing and Auto-Reconnect ... 89
Certificates ... 90
COM1 ... 91
Date / Time ... 92
Dialing ... 93
Display ... 94
Background ... 95
Appearance ... 95
Backlight ... 96
Input Panel ... 97
Internet Options ... 98
Keyboard ... 101
Mappable Keys ... 102
Mixer ... 103
Output panel ... 103
Input Panel ... 104
Mouse ... 105
MX8 Options ... 106
Start | Settings | Control Panel | MX8 Options ... 106

Communication 106
Network and Dialup Options 107
Owner 109
Password 111
PC Connection 112
Power 113
Regional and Language Settings 115
Remove Programs 116
Scanner Wedge Introduction 117
Barcode Processing Overview 118
Factory Default Settings 119
Main Tab 120
COM1 Tab 121
Barcode Tab 122
Buttons 123
Continuous Scan Mode 123
Enable Code ID 124
Barcode – Custom Identifiers 126
Parameters 126
Buttons 127
Control Code Replacement Examples 128
Barcode Processing Examples 129
Barcode - Ctrl Char Mapping 130
Translate All 130
Parameters 131
Barcode - Symbology Settings 132
Parameters 133
Strip Leading/Trailing Control 134
Barcode Data Match List 135
Barcode Data Match Edit Buttons 135
Match List Rules 136
Add Prefix/Suffix Control 137
Length Based Barcode Stripping 138
Vibration Tab 140
Stylus 141
System 142
General Tab 142
Memory Tab 143
Device Name Tab 143
Copyrights Tab 144

Volume and Sounds 145
Good Scan and Bad Scan Sounds 146
WiFi Control Panel 146
Enabler Installation and Configuration 147
Introduction 147
Installation 147
Installing the Enabler on LXE Devices 147
Briefly . . . 148
Enabler Uninstall Process 148
Stop the Enabler Service 148
Update Monitoring Overview 149
Mobile Device Wireless and Network Settings 149
Preparing an LXE Device for Remote Management 150
Using Wavelink Avalanche to Upgrade System Baseline 151
Version Information on LXE Mobile Devices 151
User Interface 152
Enabler Configuration 153
File Menu Options 154
Avalanche Update using File | Settings 155
Menu Options 155
Connection 156
Execution 157
Server Contact 158
Startup/Shutdown 159
Scan Config 160
Display 161
Shortcuts 162
Adapters 162
Status 165
Exit 166
Using Remote Management 166
For Your MX8 166
Using eXpress Scan 167
Step 1: Create Barcodes 167
Step 2: Scan Barcodes 167
Step 3: Process Completion 169
Reset to Default Settings 170
Reset Registry 170
Reset All 170
Reflash the MX8 171

Reflash the Operating System ... 171
Reflashing and Language Options ... 171
Preparation ... 171
Procedure ... 171
Command Line Interface ... 173
Troubleshooting ... 174
Battery State and OS Upgrade ... 174
Wireless Network Configuration for LXE Devices ... 175
Important Notes ... 175
Summit Client Utility ... 176
Help ... 176
Summit Tray Icon ... 177
Wireless Zero Config Utility and the Summit Radio ... 178
Main Tab ... 179
Admin Login ... 180
Auto Profile ... 181
Profile Tab ... 182
Using the Scan Feature ... 183
Profile Parameters ... 184
IMPORTANT ... 184
Profile ... 184
SSID ... 184
Client Name ... 184
Power Save ... 184
Tx Power ... 185
Bit Rate ... 185
Radio Mode ... 186
Auth Type ... 187
EAP Type ... 187
Encryption ... 188
Status Tab ... 189
Diags Tab ... 190
Global Tab ... 191
Global Parameters ... 191
IMPORTANT ... 191
Roam Trigger ... 192
Roam Delta ... 192
Roam Period ... 193
BG Channel Set ... 193

DFS Channels 194
Aggressive Scan 194
CCX Features 194
WMM 195
Auth Server 195
TX Diversity 195
RX Diversity 196
Frag Thresh 196
RTS Thresh 196
LED 197
Tray Icon 197
Hide Password 197
Admin Password 197
Auth Timeout 198
Certs Path 198
Ping Payload 198
Ping Timeout ms 199
Ping Delay ms 199
Sign-On vs. Stored Credentials 200
How to: Use Stored Credentials 200
How to: Use Sign On Screen 200
Windows Certificate Store vs. Certs Path 202
User Certificates 202
Root CA Certificates 202
Configuring the Profile 204
No Security 205
WEP 206
LEAP 207
PEAP/MSCHAP 208
PEAP/GTC 210
WPA/LEAP 212
EAP-FAST 213
EAP-TLS 215
WPA PSK 217
Certificates 218
Generating a Root CA Certificate 218
Installing a Root CA Certificate 220
Generating a User Certificate 221
Installing a User Certificate 224

Keymaps 226
32 key Numeric-Alpha Keymap 226
32 key Alpha-Mode Keymap 232
Technical Specifications 238
Dimensions and Weight 239
Environmental Specifications 239
Network Card Specifications 239
Summit 802.11 b/g 239
Summit 802.11a/b/g 240
Bluetooth 240
AppLock Error Messages 241
Hat Encoding 248
Revision History 249
Index 250

Introduction

The LXE® MX8 is a rugged, portable, hand-held Microsoft® Windows® CE 5.0 equipped mobile computer capable of wireless data communications. The MX8 can receive and transmit information using an 802.11 network card and it can store information for later transmission through an RS-232 or USB port.

The mobile device is vertically oriented and features backlighting for the display. The touch screen display supports graphic features and Windows icons that the Windows CE 5.0 operating system supports.

Contact your LXE representative for information on the latest upgrades for your MX8.

Based on your installed software version and hardware options, your setup may not be exactly the same as described in this guide. Contact your LXE representative for information on the latest upgrades for your MX8.

MX8WMRG	Reference guide for the user of an MX8 with a Windows Mobile 6.1 operating system.
MX8RG	Reference guide for the user of an MX8 with a Windows CE 5 operating system.

Components

Front

1. Scanner/Imager Aperture
2. Speaker
3. System Status LED
4. Scan Button
5. Orange Key (Sticky Key)
6. Blue Key (Sticky Key)
7. Scan Status LED
8. Cable Port
9. On / Off Button
10. Alpha Lock LED

Back

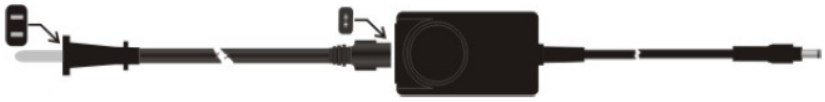
1. Scanner/Imager Aperture
2. Trigger Handle Attach Points
   and
   Handstrap Retainer Bracket Attach Points
3. Main Battery
4. Battery Fastener
5. Cable Port

Note: The touch screen stylus can be tethered to the handstrap or the trigger handle.

I/O Port and Cables

I/O Port

Cable: Multipurpose RS-232 and Power MX8055CABLE	
Cable: Multipurpose USB and Power MX8051CABLE	
Adapter/Cable : Audio MX8060CABLE	

AC/DC Adapter for MX8 and MX8 Cradles MX8301PWRSPLY (US) MX8302PWRSPLY (WW)	 AC Adapter and AC Power Cable

Scanner / Imager Aperture

Caution: Never stare directly into the beam aperture.

If **Continuous Scan Mode** has been enabled (default is disabled), the laser is always on and decoding. Caution: Laser beam is emitted continuously. Do not stare into the laser beam.

Handle

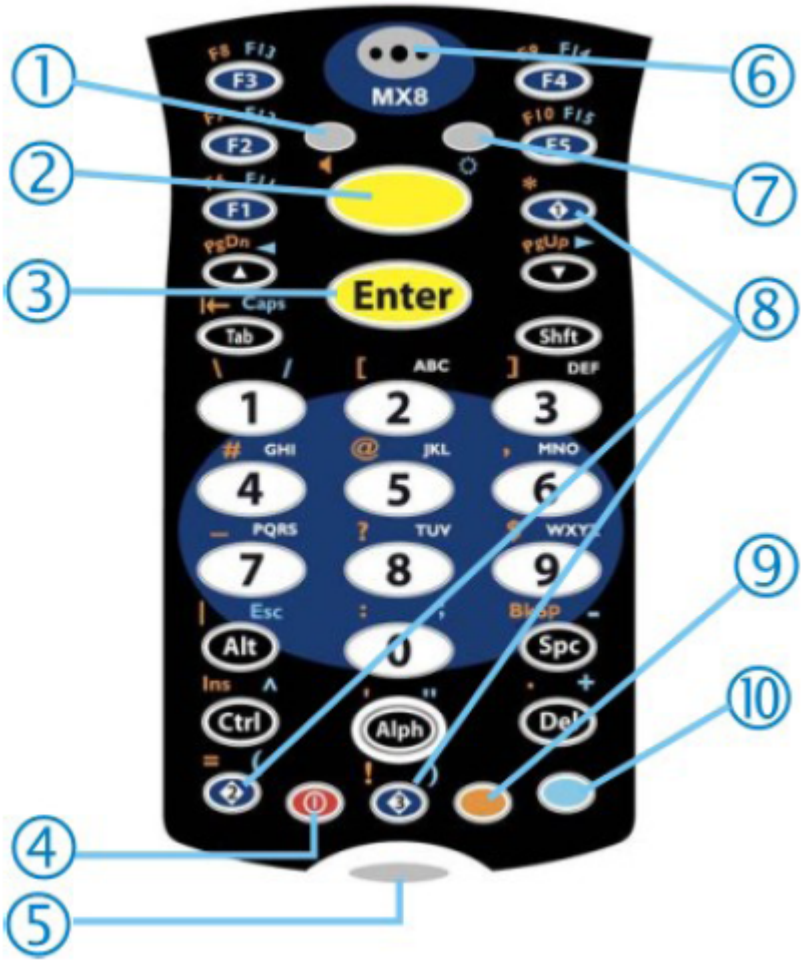
1. Imager / Scanner Aperture
2. Trigger
3. Handle
4. Tether Attach Point

Handstrap

1. Handstrap Retainer Bracket
2. Handstrap
3. Handstrap Clip

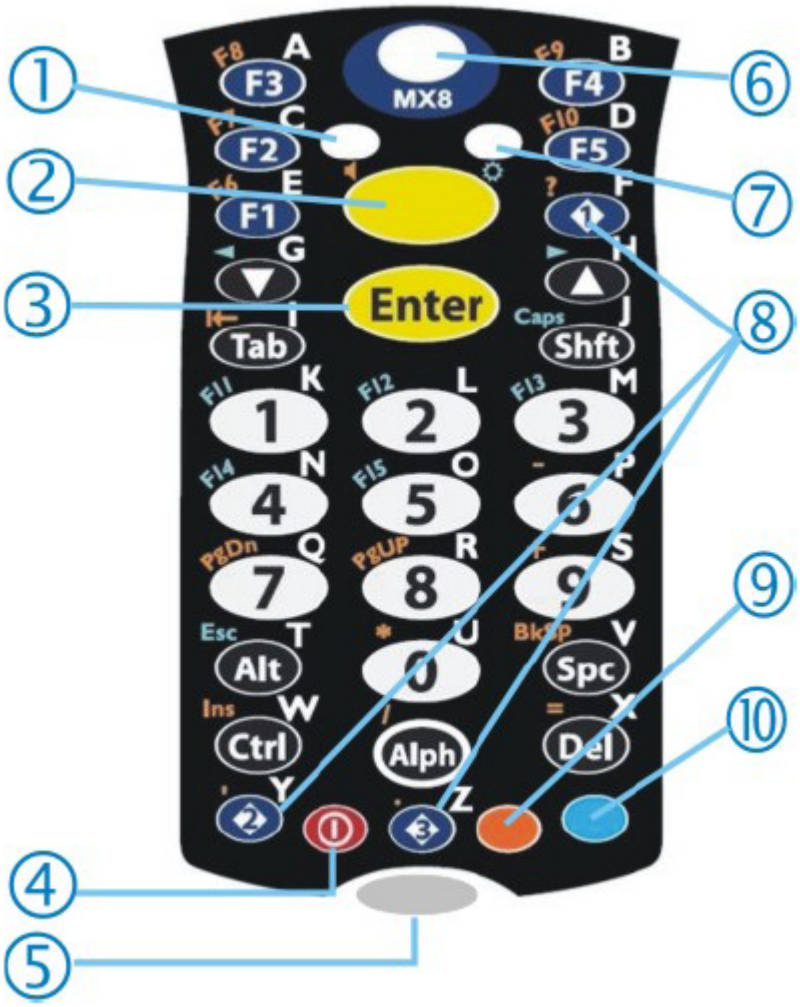
Keypads

32 Key Triple-Tap Keypad



1. System Status LED
2. Scan Button
3. Enter Button
4. On / Off Button
5. Scan Status LED
6. Speaker
7. Alpha Status LED
8. Diamond Keys
9. Orange Key (Sticky)
10. Blue Key (Sticky)

32 Key Alpha-Mode Keypad



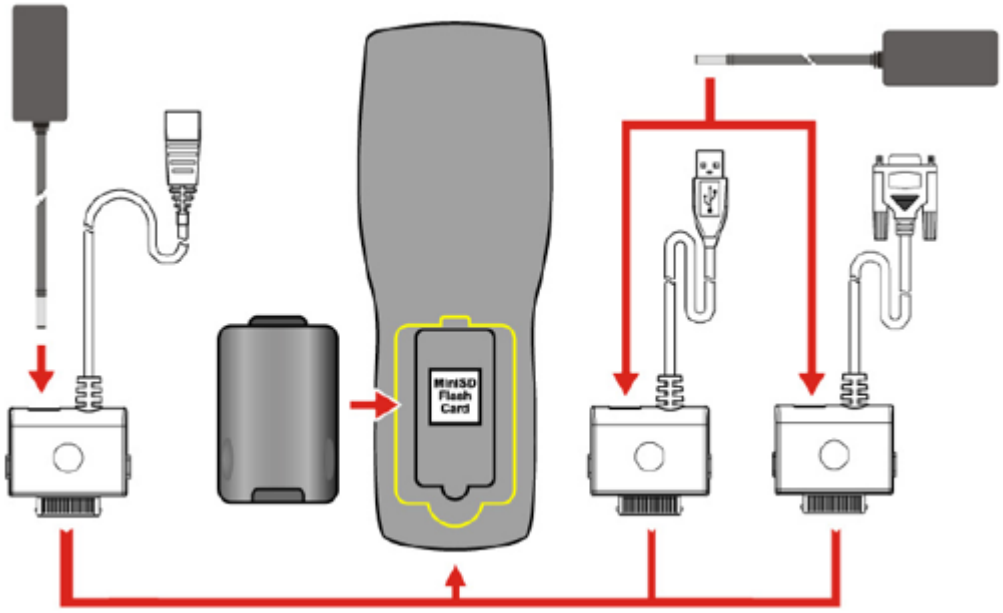
1. System Status LED
2. Scan button
3. Enter Button
4. On / Off Button
5. Scan Status LED
6. Speaker
7. Alpha Status LED
8. Diamond Keys
9. Orange Key (Sticky)
10. Blue Key (Sticky)

MX8 Troubleshooting

Can’t change the date/time or adjust the volume.	AppLock is installed and may be running in User Mode on the MX8. AppLock user mode restricts access to the control panels.
Touchscreen is not accepting stylus taps or needs recalibration.	Press <Ctrl>+<Esc> to force the Start Menu to appear. Use the tab, backtab and cursor keys to move the cursor from element to element.
MX8 seems to lockup as soon as it is warm booted.	There may be slight delays while the wireless client connects to the network, authorization for voice-enabled applications complete, and Bluetooth relationships establish or re-establish. When the desktop appears or an application begins, the MX8 is ready for use.
New MX8 main batteries don't last more than a few hours.	New batteries must be fully charged prior to first use. Li-Ion batteries (like all batteries) gradually lose their capacity over time (in a linear fashion) and never just stop working. This is important to remember – the MX8 is always ‘on’ even when in the Suspend state and draws a small amount of battery power at all times.
Keep losing ActiveSync connection between my host computer and the MX8.	When the MX8 enters Suspend Mode, all connections are closed to save battery power. When the MX8 wakes up, if ActiveSync connection does not automatically re-establish, disconnect the cable, wait 1-2 seconds and reconnect the cable.

Hardware

System Hardware



802.11b/g and a/b/g Wireless Client

The MX8 has an LXE 802.11 network card that supports diversity with two internal antennas. The CPU board does not allow hot swapping the network card. Adjusting power management on the network card is set to static dynamic control. WEP, WPA and LEAP are supported.

Central Processing Unit

The CPU is a 520MHz Intel Xscale PXA27X CPU. The operating system is Microsoft Windows CE 5.0. The OS image is stored on an internal flash memory card and is loaded into DRAM for execution. Xscale turbo mode switching is supported and turned on by default.

The MX8 supports the following I/O components of the core logic:

- One mini SD card slot under the main battery pack.
- One serial port.
- One Digitizer Input port (Touchscreen).

System Memory

The CPU configuration supports 128MB Strata Flash, 128MB SDRAM. The system optimizes for the amount of SDRAM available.

Internal flash is used for boot loader code and system low-level diagnostics code. Bootloader code is validated at system startup. The UUID required by CE 5.0 is stored in the boot flash. A second copy of the bootloader code is stored on the internal SD Flash drive, so that if a damaged bootloader is detected, it may be re-flashed correctly.

Internal Mini SD Memory Card

The MX8 has one mini SD card interface for storage for User data. The mini SD slot is accessible from the battery compartment and ships with an LXE qualified 128MB Mini SD Flash card.

The internal mini SD flash card supports a FAT16 file system, via a special device driver, and appears to the OS as a folder. This allows the contents to be manipulated via the standard Windows CE interface.

Video Subsystem

The touchscreen is a 2.8" (7.1 cm) diagonal viewing area, ¼ VGA 320 by 240 pixel TFT Transmissive Active Color LCD. Backlighting is available and can be turned on and off with key sequences. The turn-off timing is configured through the Start | Settings | Control Panel | Display | Backlight icon. The display controller supports Microsoft CE 5.0 graphics modes.

A touchscreen allows mouse functions (tapping on the display or signature capture) using an LXE approved stylus. The touchscreen has an actuation force with finger less than 100 grams. The color display has an LED backlight and is optimized for indoor use.

The display appears black when the MX8 is in Suspend Mode.

Power Supply

The MX8 uses two batteries for operation.

- **Main Battery** A replaceable 3000 mAh Lithium-Ion (Li-Ion) battery pack. The battery pack recharges while in the MX8 when the device is connected to the optional external MX8 AC/DC power source. The main battery pack can be removed from the MX8 and inserted in the MX8 Multi- Charger which simultaneously charges up to four battery packs in five hours. The MX8 status indicator is illuminated when the backup battery is being charged by the main battery pack. A new main battery pack can be fully charged in 5 hours when it is in an MX8 connected to AC power and 5 hours when it is in the MX8 multicharger.
- **Backup Battery** An internal 160mAh Nickel Metal Hydride (Ni-MH) battery. The backup battery is recharged directly by the MX8 main battery pack. Recharging maintains the backup battery near full charge at all times. When the backup battery is fully drained, it may take up to 5 hours to recharge. The capability to discharge the backup battery is provided to allow the user to condition the battery in order to recover full battery capacity. The backup battery must be replaced by qualified service personnel. The battery has a minimum 2 year service life.

Note: An uninterrupted external power source (wall AC adapters) transfers power to the MX8's internal charging circuitry which, in turn, recharges the main battery and backup battery. Frequent connection to an external power source, if feasible, is recommended to maintain backup battery charge status as the backup battery cannot be recharged by a dead or missing main battery.

COM Port

The MX8 has one 20-pin multifunction I/O port that can be configured by the user.

Note: The MX8 AC Power Adapters (MX8301PWRSPLY and MX8302PWRSPLY) are only intended for use with the MX8 multi-purpose cables and the MX8 Desktop Cradle.

RS-232 Serial Port

Configured as COM1. Bi-directional full duplex and supports data rates up to 115 Kb/s. The port does not have RI or CD signals nor does it support 5V switchable power on pin 9 for tethered scanners. The serial port driver supports full duplex communications over the serial port. It supports data exchange via ActiveSync, but does not automatically start ActiveSync when connected. The "Cable, Multipurpose RS-232 and Power" accessory can be used with the RS-232 serial port. External AC power is available when the multipurpose RS-232/Power cable is connected.

USB Client Port

The MX8 has one USB Client port for ActiveSync applications. An accessory USB cable, "Cable, Multipurpose USB and Power" is available to connect the MX8 to a USB Type A plug on a PC for ActiveSync functions. External AC power is available when the multipurpose USB Client/Power cable is connected.

Audio Headset Connection

An audio headset interface is available using the "Adapter, Audio" accessory with the I/O port. The connection cable connects the MX8 to a Voxware quick disconnect 4-pin interface. This cable adapts to specific styles of headsets for voice input, stereo or mono output. The MX8 with a Summit Client supports mono only. A 3-wire connector with (at a minimum) connections for ground, microphone, and 1 speaker. Connecting the headset to the MX8 COM port turns off audio output to the MX8 speaker on the front of the mobile device. All sounds previously directed to the speaker are redirected to the headphone, including beeps. Bias voltage for an electric condenser microphone is available. External AC power is not available for this option. Power is drawn from the main battery pack.

Audio Support

Speaker The speaker supplies audible verification signals normally used by the Window's CE operating system. The speaker is located on the front of the MX8, above the MX8 logo. The mobile device emits a Sound Pressure Level (loudness) of at least 102 dB measured as follows:

- Frequency: 2650 + 100 Hz
- Distance: 10 cm on axis in front of Speaker opening in front of unit.
- Duration : Continuous 2650 Hz tone.

The default is 1 beep for a good scan and 2 beeps for a bad scan.

Volume Control Volume control is managed by Windows CE control panel applet, an API and the Orange-Scan up/ down arrow key key sequence.

Voice All Microsoft-supplied audio codecs are included in the OS image. The hardware codecs, the input and output analog voice circuitry and the system design are designed to support voice applications using a headset connected to the "Adapter, Audio" accessory cable and the MX8 I/O connector at the base of the device.

Scanner / Imager Port

The MX8 has one integrated barcode scanner/imager port. Only one scan engine is installed at a time. Scan engines are not “hot swappable”. The MX8 may have one of three scan engines:

- Intermec EV-15 linear imager
- Symbol SE955-I000WR
- Hand Held Products 5300 2D image undecoded scanner

The integrated scan engine activates when the Scan button on the front of the MX8 is pressed or when the trigger on an installed trigger handle is pressed. A control panel applet (Start | Settings | Control Panel | Scanner) is available to set scanner/imager options.

Functionality of the integrated scan engine driver is based on the decoder driver version installed in the MX8. Functions may include audible tones on good scan (at the maximum db supported by the speaker), failed scan, LED indication of a scan in progress, among other functions. If enabled, a vibration device provides a tactile response on a good scan event.

Bluetooth LXEZ Pairing

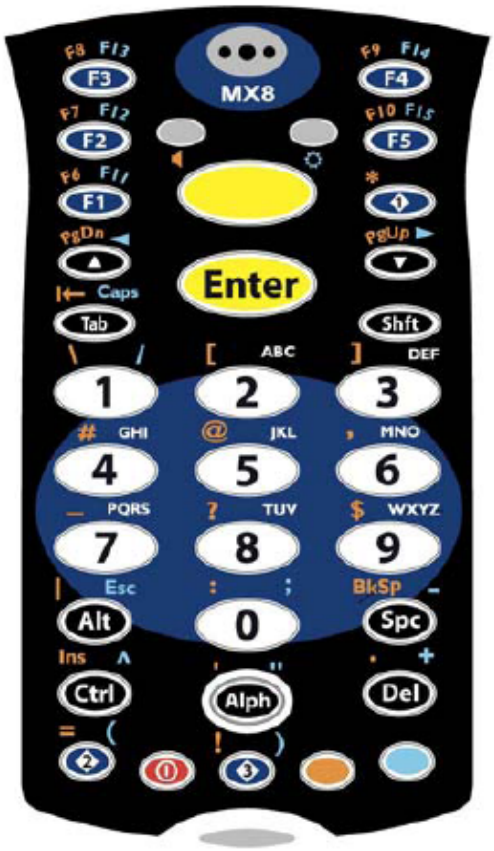
The MX8 contains Bluetooth version 2.0 with Enhanced Data Rate (EDR) up to 3.0 Mbit/s over the air. Bluetooth device connection (or pairing) can occur at distances up to 32.8 ft (10 meters) Line of Sight. The wireless client retains network connectivity while Bluetooth is active.

The user will not be able to select PIN authentication or encryption on connections from the MX8. However, the MX8 supports authentication requests from pairing devices. If a pairing device requests authentication or encryption, the MX8 displays a prompt for the PIN or passcode. Maximum encryption is 128 bit. Encryption is based on the length of the user’s passcode.

The Bluetooth client can simultaneously support one printer as a slave Bluetooth device and one scanner, either as a slave or as a master Bluetooth device. Bluetooth devices can be added and removed using a control panel (Start | Settings | Control Panel | Bluetooth).

- The MX8 does not have a Bluetooth managed LED.
- The LED on the Bluetooth scanner illuminates during a scanning operation; the Scan LED on the MX8 does not illuminate.
- Barcode data captured by the Bluetooth scanner is manipulated by the settings in the MX8 Scanner Properties control panel applet.
- Multiple beeps may be heard during a barcode scan using the Bluetooth scanner; beeps from the Bluetooth scanner as the barcode data is accepted/rejected, and other beeps from the MX8 during final barcode data manipulation.

Keypads



Triple-Tap

Alpha-Mode

Using the Triple-Tap Keypad

- When using a sequence of keys that require an alpha key, first press the Alph key. Use the Shft sticky key or the Caps key sequence (Blue+Tab) for upper case alphabetic characters.
- Pressing the Alph key forces “Alpha” mode for the 2,3,4,5,6,7,8, and 9 keys. The 1 and 0 keys continue to place a 1 and 0 into the text field.
- To create a combination of numbers and letters before pressing Enter, remember to tap the Alph key to toggle between Alpha and Numeric mode.
- When using a sequence of keys that do not include the Alph key but does include a sticky key, press the sticky key first then the rest of the key sequence.

Using the Alpha-Mode Keypad

- When using a sequence of keys that require a lowercase alpha key, first press the Alph key. Use the Shft sticky key for upper case alphabetic characters.
- Pressing the Alph key forces “Alpha” mode for the numeric keys.
- To create a combination of numbers and letters before pressing Enter, remember to tap the Alph key to toggle between Alpha and Numeric mode.
- When using a sequence of keys that do not include the Alph key but does include a sticky key, press the sticky key first then the rest of the key sequence.
- Since letters are mapped to Alt, Ctl, Shft, these modifiers must be pressed before the Alph key is pressed. For example, for Alt T, press Alt, then Alpha, then Alt again.
- A modifier key pressed after itself toggles that modifier key off.
- Pressing Alph locks the keypad into Alpha mode. Pressing Alph a second time toggles alpha mode off.

Display

The touchscreen display is an active color LCD unit capable of supporting VGA graphics modes. Display size is 240 x 320 pixels in portrait orientation. The covering is designed to resist stains. The touchscreen allows signature capture and touch input. A pen stylus is included. The touchscreen responds to an actuation force (touch) of 4 oz. of pressure (or greater). The color display is optimized for indoor lighting. The display appears black when the device is in Suspend Mode or when both batteries have expired and the unit is Off.

Display Backlight Timer

When the Backlight timer expires the display backlight is turned off. The default value for the battery power timer is 3 seconds. The default value for the external power timer is “never” and the checkbox is blank.

The backlight timer dims the backlight on the touch screen at the end of the specified time.

When the display wakes up, the Backlight timer begins the countdown again.

The keypad backlight can be synchronized with the display backlight activity.

Status LEDs

The MX8 does not have a **Bluetooth managed LED**. Any Bluetooth activity indicators are located in the Desktop taskbar.

- **System Status LED** is located at the top left of the keypad, above the Scan button.

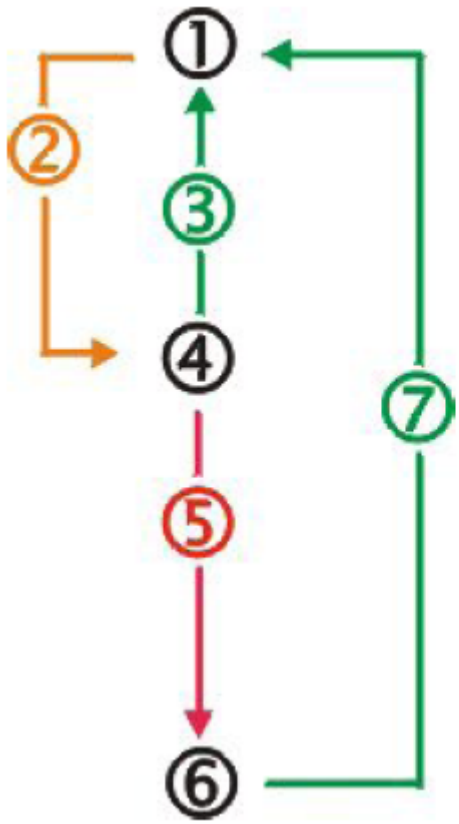
- The **Scan Status LED** is located below the keypad.

- The **Alpha Mode LED** is located next to the F5 key on the 32-key keypad (Numeric-Alpha keypad).

LED	Color - Activity	Indicates ...
System Status	Red - Blinking	Power fail. Replace the main battery with a fully charged main battery. Or Connect the MX8 to external AC power then replace the main battery with a fully charged main battery.
	Red - Steady	Main Battery Low. If the main battery is not replaced with a fully charged battery before the main battery fails, the MX8 is turned Off.
	Green - Blinking	Display Off. No user intervention required.
	No Color	Status is good. No user intervention required.
Scan Status	Green - Steady	Good scan.
	Red – Steady	Scan in progress.
	No color	Scanner / Imager ready for use.
	Amber - Steady	Decoder engine storing changed parameters.
Alpha Mode (Alph LED)	Green - Steady	MX8 is in Alpha character input mode.
	No color	MX8 is in Numeric key input mode.

Power

Power Modes



Modes

1 On

4 Suspend

6 Off

Mode Change Cause

2 Power key tapped or Suspend timer has timed out

3 Power key, any key, trigger press, or touchscreen tap

5 Backup battery and main battery depleted

7 Power Restored and On key pressed

Refer to the following mode change explanations.

On Mode

The Display

When the display is On:

- the keyboard, touchscreen and all peripherals function normally
- the display backlight is on until the Backlight timer expires, then it dims

The MX8

After a new MX8 has been received, a charged main battery inserted, and the Power key tapped, the MX8 is always On until both batteries are drained completely of power.

When the main battery and backup battery are drained completely, the unit is in the Off mode. The unit transitions from the Off mode to the On mode when a charged main battery is inserted or external power is applied and the Power key is pressed.

Suspend Mode

The Suspend mode is entered when the unit is inactive for a predetermined period of time or the user taps the Power key. MX8 Suspend timers are set using Start | Settings | Control Panel | Power | Schemes tab.

A Power key tap wakes the unit and resets the display backlight timers. Wake up sources can be configured by the administrator, e.g.; any key press, a trigger press, a touchscreen tap, AC adapter insert, USB cable insert, or Serial cable CTS will also wake the unit and reset the display backlight timers. When the unit wakes up, the Display Backlight and the Power Off timers begin the countdown again.

The MX8 should be placed in Suspend mode before hotswapping the main battery.

Off Mode

The unit is in Off Mode when the main battery and the backup battery are depleted. Insert a fully charged main battery and press the Power key to turn the MX8 On.

Batteries

The MX8 is designed to work with a Lithium-Ion (Li-ion) battery from LXE. Under normal conditions it should last approximately eight to ten hours before requiring a recharge. The more you use the scanner or the wireless transmitter, the shorter the time required between battery recharges.

A suspended MX8 maintains the date and time for a minimum of two days using a main battery that has reached the Low Warning point and a fully charged backup battery. The MX8 retains data, during a main battery hot swap, for at least 5 minutes.

Note: New main battery packs must be charged prior to use. This process takes up to five hours in an MX8 Multi-Charger and five hours when the MX8 is connected to external power.

Checking Battery Status

Tap the Start | Settings | Control Panel | Power | Battery tab. Battery level, power status and charge remaining is displayed. Turbo setting can be enabled and disabled using this control panel.

Note: Power drain increases substantially in Turbo mode.

Main Battery Pack

The main battery pack has a rugged plastic enclosure that is designed to withstand the ordinary rigors of an industrial environment. Exercise care when transporting the battery pack making sure it does not come in contact with excessive heat or any power source other than the MX8 Multi-Charger or the MX8 unit. The battery pack enclosure functions as the protective cover for the battery well.

The main battery pack is properly installed in the unit it provides up to eight hours of operation depending upon use and accessories installed. The battery pack is resistant to impact damage and falls of up to four feet to a concrete surface. Under normal conditions it should last approximately eight hours before requiring a recharge. The more you use the scanner or the wireless transmitter, the shorter the time required between battery recharges.

Battery Hotswapping

Important: When the backup battery power is Low (Start | Settings | Control Panel | Power | Battery tab) connect the AC adapter to the MX8 before replacing the main battery pack.

When the main battery power level is low, the MX8 will signal the user with the low battery warning indicator (the Status LED remains a steady red) that continues until the main battery is replaced, the battery completely depletes, or external power is applied to the MX8 using an AC Adapter.

You can replace the main battery by first placing the MX8 in Suspend Mode then removing the discharged main battery and installing a charged main battery within a five minute time limit (or before the backup battery depletes). When the main battery is removed the MX8 enters Critical Suspend state, the MX8 remains in Suspend mode, the display is turned off and the backup battery continues to power the unit for at least five minutes.

Though data is retained, the MX8 cannot be used until a charged main battery pack is installed. After installing the new battery, press the Power key. Full operational recovery from Suspend can take several seconds while the client is reestablishing a network link. If the backup battery depletes before a fully charged main battery can be inserted, the MX8 will turn Off. Full operational recovery from Suspend can take several seconds while the wireless client connects to the network, authorization for Voxware-enabled applications complete, Wavelink Avalanche management of the MX8 startup completes, and Bluetooth relationships establish or re-establish.

Low Battery Warning

It is recommended that the main battery pack be removed and replaced when its energy depletes. When the main battery Low Battery warning appears (the Status LED remains a steady red) perform an orderly shut down, minimizing the operation of any installed devices and insuring any information is saved that should be saved.

Note: Once you receive the main battery Low Battery warning, you have approximately 5 minutes to perform an orderly shutdown and replace the main battery pack before the device powers off. The Low Battery warning will transition the MX8 to Suspend before the MX8 powers off.

Backup Battery

The MX8 has a backup battery that is designed to provide limited-duration electrical power in the event of main battery failure. The backup battery is a 160 mAh Nickel Metal Hydride (Ni-MH) battery that is factory installed in the unit. The energy needed to maintain the backup battery near full charge at all times is drawn from the MX8 main battery. It takes several hours of operation before the backup battery is capable of supporting the operation of the MX8. The duration of backup battery life is dependent upon operation of the MX8, its features and any operating applications. The backup battery has a minimum service life of two years. The backup battery is replaced by LXE.

Handling Batteries Safely

- Never dispose of a battery in a fire. This may cause an explosion.
- Do not replace individual cells in a battery pack.
- Do not attempt to pry open the battery pack shell.
- Be careful when handling any battery. If a battery is broken or shows signs of leakage do not attempt to charge it. Dispose of it using proper procedures.

Caution

Nickel-based cells contain a chemical solution which burns skin, eyes, etc. Leakage from cells is the only possible way for such exposure to occur. In this event, rinse the affected area thoroughly with water. If the solution contacts the eyes, get immediate medical attention.

NiCd and Li-Ion batteries are capable of delivering high currents when accidentally shorted. Accidental shorting can occur when contact is made with jewelry, metal surfaces, conductive tools, etc., making the objects very hot. Never place a battery in a pocket or case with keys, coins, or other metal objects.

Software

Operating System

There are several different aspects to the setup, configuration and operation of the MX8. Many of the setup and configuration settings are dependent upon the optional features such as hardware and software installed on the unit. The examples found in this section are to be used as examples only, the configuration of your specific MX8 may vary. The following sections provide a general reference for the configuration of the MX8 and some of its optional features.

Your MX8 operating system is Windows CE 5.0. The MX8 operating system revision is displayed on the Desktop. This is the factory default value for the Desktop Display Background.

Windows CE 5.0 Operating System

For general use instruction, please refer to commercially available Windows CE user's guides or the Windows CE on-line Help application installed with the MX8.

This segment assumes the system administrator is familiar with Microsoft Windows options and capabilities loaded on most standard Windows computers.

Therefore, the sections that follow describe only those Windows capabilities that are unique to the MX8 and its Windows CE environment.

General Windows CE Keyboard Shortcuts

Use the keyboard shortcuts in the chart below to navigate with the MX8 keyboard. These are standard keyboard shortcuts for Windows CE applications.

Press these keys …	**To …**
CTRL + C	Copy
CTRL + X	Cut
CTRL + V	Paste
CTRL + Z	Undo
DELETE	Delete
SHIFT with any of the arrow keys	Select more than one item in a window or on the desktop, or select text within a document.
CTRL+A	Select all.
ALT+ESC	Cycle through items in the order they were opened.
CTRL+ESC	Display the Start menu.
ALT+Underlined letter in a menu name	Display the corresponding menu.
Underlined letter in a command name on an open menu	Carry out the corresponding command.
ESC	Cancel the current task.

The touchscreen provides equivalent functionality to a mouse:

- A touch on the touchscreen is equivalent to a left mouse click.
- Many items can be moved by the “drag and drop” method, touching the desired item, moving the stylus across the screen and releasing the stylus in the desired location.
- A double stylus tap is equivalent to a double click.
- A touch and hold is equivalent to a right mouse click.

Note: Some applications may not support this right click method. Please review documentation for the application to see if it provides for right mouse click configuration.

Warmboot

A warmboot reboots the computer without erasing any registry data. However, any applications installed to RAM are lost, as is all data in RAM. This happens because the operating system is stored on the flash drive, but must be loaded into RAM to run.

All registry configurations are automatically preserved. Any applications stored as .CAB files in the System directory and configured in the registry to persist are reinstalled on boot up by the Launch utility.

Coldboot

Temporary data not saved is lost. All programs are re-launched. Previously saved user settings are restored. Cold boot is also called cold reset.

Hold down the Blue key, the Scan key and the Power key until the screen blanks. Release the keys and the MX8 cold boots.

or

Tap Start | Run and, using the virtual keyboard or SIP, type COLDBOOT. Tap the OK button and the MX8 cold boots. This command is not case-sensitive.

There may be small delays while the wireless client connects to the network, authorization for Voxware-enabled applications complete, Wavelink Avalanche management of the MX8 startup completes, and Bluetooth relationships establish or re-establish.

Clearing Persistent Storage / Reset to Default Settings

Note: Important:-- Because of the extreme nature of resetting the MX8 to factory default settings, LXE recommends that this process be used only as an emergency procedure and the Warm Boot be used whenever necessary.

Two different resets are provided on the MX8. User registry settings can be reset to factory defaults using ClearHive.exe or all settings, which includes registry and the persist keys in Launch.reg, can be reset using Coldboot.exe.

Reset Registry

To reset the MX8 registry to factory defaults:

1. Tap Start | Run and, using the virtual keyboard or SIP, type CLEARHIVE. Tap the OK button. This command is not case-sensitive.
2. A dialog appears, explaining the restore to default settings process. Select either Yes or Cancel.
3. Selecting Yes causes the reset process to continue and factory default settings are restored when the device powers on again. Selecting Cancel stops the reset process. All previous user settings, authorizations and configurations, wireless connection settings, Bluetooth relationship settings and Control Panel parameter settings are cleared.
4. Programs begin installing and messages are shown on the display as each is installed. When the CE Desktop appears or the final application opens, the reset is complete.

Calibrating the touchscreen will need to be performed during this process.

If needed, change the MX8 Time and Date from it's factory default value by tapping the Start | Settings | Control Panel | Date/Time icon.

Reset All

To reset all MX8 configuration to factory defaults:

Tap Start | Run and, using the virtual keyboard or SIP, type RESETALL. Tap the OK button. Because of the extreme nature of resetting the MX8 to factory default settings, two confirmation prompts are displayed. To proceed with the reset, select 'Yes' to both prompts. The MX8 cold boots after resetting the configuration. This command is not case-sensitive.

There may be small delays while the wireless client connects to the network, authorization for Voxware-enabled applications complete, Wavelink Avalanche management of the MX8 startup completes, and Bluetooth relationships establish or re-establish.

Note: ResetAll.exe vs ClearHive.exe – The ClearHive.exe utility clears the registry and coldboots the MX8. The ResetAll.exe utility clears the registry, resets the persist keys in the Launch.reg file to factory defaults and coldboots the MX8.

Folders Copied at Startup

The following folders are copied on startup:

- System\Desktop=> Windows\Desktop
- System\Favorites=> Windows\Favorites
- System\Fonts=> Windows\Fonts
- System\Help => Windows\Help
- System\Programs=> Windows\Programs

This function copies only the directory contents, no sub-folders.

The following folders are NOT copied on startup:

- Windows\AppMgr
- Windows\Recent
- Windows\Startup

Because copying these has no effect on the system or an incorrect effect.

Files in the Startup folder are executed, but only from System\Startup. Windows\Startup is parsed too early in the boot process so it has no effect.

Executables in System\Startup must be the actual executable, not a shortcut, because shortcuts are not parsed by launch.

Saving Changes to the Registry

The MX8 saves the registry when you:

- Tap Start | Run then type Warmboot. Tap OK.
- Perform a Suspend / Resume function (by pressing the Pwr key and then pressing it again).
- Install Restart in the Start menu by Start | Run then type CTL RESTART=1 and tap the OK button. Tap Start | Restart.

The registry save process takes 0 – 3 seconds. If nothing has been changed, nothing is saved (e.g. 0 seconds)

The registry is automatically saved every 20 minutes. It is also saved every tenth time the registry settings are changed. Registry settings are changed when control panel applet (e.g. Date/Time) parameters are changed by the user and a warm boot was not performed afterward.

When you tap Start | Run then type Coldboot and tap the OK button, factory default registry settings are loaded during coldboot. All customized changes and settings are lost.

Software Load

The software loaded on the MX8 consists of Windows CE 5.0 OS, hardware-specific OEM Adaptation Layer, device drivers, Internet Explorer 6.0 for Windows CE browser and utilities. The software supported is summarized below:

- Full Operating System License: Includes all operating system components, including Windows CE 5.0 kernel, file system, communications, connectivity (for remote APIs), device drivers, events and messaging, graphics, keyboard and touchscreen input, window management, and common controls.
- Network and Device Drivers
- Bluetooth (Optional)

Note: Please contact your LXE representative for software updates and CAB files as they are released by LXE.

Software Applications

The following applications are included:

- WordPad
- Scanner Wedge (LXE developed)
- ActiveSync
- Transcriber
- Internet Explorer
- Word Viewer
- Excel Viewer
- PDF Viewer
- Image Viewer

Note that the viewer applications allow viewing documents, but not editing them.

Bluetooth (Optional)

Start | Settings | Control Panel | Bluetooth

Only installed on a Bluetooth equipped MX8. The System Administrator can Discover and Pair targeted Bluetooth devices for each MX8. The System Administrator can enable / disable Bluetooth settings and assign a Computer Friendly name for each MX8.

The Bluetooth control panel can also be accessed by doubletapping the Bluetooth icon in the taskbar or on the desktop.

Java (Optional)

Installed by LXE. Files can be accessed by tapping **Start | Programs | JEM-CE**. Doubletap the EVM icon to open the EVM Console. A folder of Java examples and Plug-ins is also installed with the Java option. LXE does not support Java applications running on the mobile device.

LXE RFTerm (Optional)

Start | Programs | RFTerm

Installed by LXE. The application can also be accessed by double clicking the RFTerm desktop icon.

Avalanche

The Wavelink Avalanche Enabler installation file is loaded on the MX8 by LXE; however, the device is not configured to launch the installation file automatically. The installation application must be run manually the first time Avalanche is used. Following installation, the Wavelink Avalanche Enabler will be an auto-launch application. This behavior can be modified by accessing the Avalanche Update Settings panel through the Enabler Interface.

MX8 Utilities

The following files are pre-loaded by LXE.

LAUNCH.EXE

Launch works in coordination with registry settings to allow drivers or applications to be loaded automatically into DRAM at system startup. Registry settings control what gets launched; see the App Note for information on these settings. For examples, you can look at the registry key

HKEY_LOCAL_MACHINE \ Software \ LXE \ Persist

Launch will execute .CAB files, .BAT files, or .EXE files.

App Note

All applications to be installed into persistent memory must be in the form of Windows CE CAB files. These CAB files exist as separate files from the main installation image, and are copied to the CE device using ActiveSync, or using a Compact Flash ATA card. The CAB files are copied from ATA or using ActiveSync Explore into the folder System, which is the persistent storage virtual drive. Then, information is added to the registry, if desired, to make the CAB file auto-launch at startup.

The registry information needed is under the key HKEY_LOCAL_MACHINE \ Software \ LXE \ Persist, as follows. The main subkey is any text, and is a description of the file. Then 3 mandatory values are added:

FileName is the name of the CAB file, with the path (usually \System).

Installed is a DWORD value of 0, which changes to 1 once auto-launch installs the file.

FileCheck is the name of a file to look for to determine if the CAB file is installed. This will be the name of one of the files (with path) installed by the CAB file. Since the CAB file installs into DRAM, when memory is lost this file is lost, and the CAB file must be reinstalled.

There are three optional fields that may be added:

Order is used to force a sequence of events. Order=0 is first, and Order=99 is last. Two items which have the same order will be installed in the same pass, but not in a predictable sequence.

Delay is used to add a delay after the item is loaded, before the next is loaded. The delay is given in seconds, and defaults to 0 if not specified. If the install fails (or the file to be installed is not found), the delay does not occur.

PCMCIA is used to indicate that the file (usually a CAB file) being loaded is a radio driver, and the PCMCIA slots should be started after this file is loaded. By default, the PCMCIA slots are off on powerup, to prevent the “Unidentified PCMCIA Slot” dialog from appearing. Once the drivers are loaded, the slot can be turned on. The value in the PCMCIA field is a DWORD, representing the number of seconds to wait after installing the CAB file, but before activating the slot (a latency to allow the thread loading the driver to finish installation). The default value of 0 means the slot is not powered on. The default values for the default radio drivers (listed below) is 1, meaning one second elapses between the CAB file loading and the slot powering up.

The auto-launch process proceeds as follows:

- The launch utility opens the registry database and reads the list of CAB files to auto-launch.
- First it looks for FileName to see if the CAB file is present. If not, the registry entry is ignored. If it is present, and the Installed flag is not set, auto-launch makes a copy of the CAB file (since it gets deleted by installation), and runs the Microsoft utility WCELOAD to install it.
- If the Installed flag is set, auto-launch looks for the FileCheck file. If it is present, the CAB file is installed, and that registry entry is complete. If the FileCheck file is not present, memory has been lost, and the utility calls WCELOAD to reinstall the CAB file.
- Then, the whole process repeats for the next entry in the registry, until all registry entries are analyzed.
- To force execution every time (for example, for AUTOEXEC.BAT), use a FileCheck of “dummy”, which will never be found, forcing the item to execute.
- For persist keys specifying .EXE or .BAT files, the executing process is started, and then Launch will continue, leaving the loading process to run independently. For other persist keys (including .CAB files), Launch will wait for the loading process to complete before continuing. This is important, for example, to ensure that a .CAB file is installed before the .EXE files from the .CAB file are run.
- Note that the auto-launch process can also launch batch files (*.BAT), executable files (*.EXE), registry setting files (*.REG), or sound files (*.WAV). The mechanism is the same as listed above, but the appropriate CE application is called, depending on file type.

Registry information is already in the default image for the following:

Note: Registry entries may vary depending on software revision level and options ordered with the MX8.

LAUNCH.EXE and Persistent Storage

If any of the following directories are created in the \SYSTEM folder, Launch automatically copies all of the files in these directories to the respective folder on the flash drive:

- AppMgr
- Desktop
- Favorites
- Fonts
- Help
- Programs
- Recent

Note: Files in the Startup folder are executed, but only from \System\Startup. They are not copied to another directory.

REGEDIT.EXE

Registry Editor – LXE recommends caution when editing the Registry and also recommends making a backup copy of the registry before changes are made.

REGLOAD.EXE

Double-tapping a registry settings file (e.g. REG) causes RegLoad to open the file and make the indicated settings in the registry. This is similar to how RegEdit works on a desktop PC. The .REG file format is the same as on the desktop PC.

REGDUMP.EXE

Registry dump – Saves a copy of the registry as a text file. The file, REG.TXT, is located in the root folder.

Note: The REG.TXT file is not saved in persistent storage. To use the REG.TXT file as a reference in the even of a coldboot, LXE recommends copying the file to the \SYSTEM directory on the MX8 or storing a copy of the file on a PC.

WARMBOOT.EXE

Double click this file to warm boot the computer (i.e., all RAM is preserved). It automatically saves the registry before rebooting which means configuration changes are not lost.

WAVPLAY.EXE

Double tapping a sound file (e.g. WAV) causes WavPlay to open the file and run it in the background.

MX8 Command-line Utilities

Command line utilities can be executed by Start | Run | [program name].

COLDBOOT.EXE

Command line utility which performs a cold boot (all RAM is erased).

Passwords are lost upon cold boot. If a password is set, that password must be entered to begin the cold boot power cycle process.

PrtScrn.EXE

Command line utility which performs a screen print and saves the file in .BMP format in the \System folder. Tap Start | Run and type **prtscrn** and tap OK, or press Enter. There is a 10 second delay before the screen print is made. The device beeps and screen captured file (*scrnnnn*.bmp) is placed in the \System folder. The numeric filename is incremented by 1 each time the PrtScrn function is activated. The command is not case-sensitive.

API Calls

See Also: LXE CE API Programming Guide

The LXE CE API Programming Guide documents only the LXE-specific API calls for the MX8. It is intended as an addition to the standard Microsoft Windows CE API documentation. Details of many of the calls in the LXE guide may be found in Microsoft's documentation.

The APIs documented in the programming guide are included in the file LXEAPI.DLL, which is in the standard Windows CE image on the MX8.

For ease of software development, the files LXEAPI.H and LXEAPI.LIB are available on the accessories CD, which are the C/C++ include files and the link library for the DLL, respectively.

A full SDK is now included for Microsoft Embedded Visual C++ 4.0 (which is available free on the Microsoft website).

Access Files on the Flash Card

Click the **My Device** icon on the Desktop then click the System icon. A flash card is used for permanent storage of the MX8 drivers, CAB files and utilities. It is also used for registry content back up. CAB files, when executed, are not deleted.

Note: Always perform a warm reset (Start / Run / Warmboot) when exchanging one flash card for another.

Desktop

Note: For general use instruction, please refer to commercially available Windows CE user's guides or the Windows on-line Help application installed in the mobile device.

The MX8 Desktop appearance is similar to that of a desktop PC running Windows 2000 or XP.

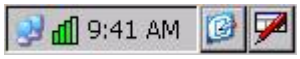
At a minimum, it has the following icons that can be double tapped with the stylus to access My Computer, Internet Explorer, and the Recycle Bin.

At the bottom of the screen is the Start button. Tapping the Start Button causes the Start Menu to pop up. It contains the standard Windows menu options: Programs, Favorites, Documents, Settings, Help, and Run.

Desktop Icon	Function
My Device	Access files and programs.
Recycle Bin	Storage for files that are to be deleted.
Bluetooth	Discover and then pair with nearby discoverable Bluetooth devices.
My Documents	Storage for downloaded files / applications.
Internet Explorer	Connect to the Internet/intranet (requires radio card and Internet Service Provider – ISP enrollment is not available from LXE).
Summit Client Utility	Used for accessing the appropriate wireless configuration, SCU (Summit Client Utility)
eXpress Scan	The eXpress Scan utility allows an administrator to scan barcodes to provide the initial network and Avalanche Mobile Device Server address configuration. This eliminates the need to edit radio parameters manually on the LXE device. eXpress Scan uses barcodes created with eXpress Config.
LXE RFTerm	RFTerm is an optional terminal emulation program for LXE devices with a Windows operating System, When RFTerm is installed, this icon is displayed on the desktop.

Desktop Icon	Function
Remote Desktop Connection	A shortcut to the Remote Desktop Configuration utility.
Avalanche	Wavelink® Avalanche Mobility Center™ (Avalanche MC) is a remote client management system that is designed to distribute software and configuration updates to monitored devices, including LXE® computers with Microsoft® Windows® CE. The enabler for Wavelink Avalanche is loaded on the LXE device but not installed. When the enabler is installed this icon is displayed on the desktop.
Java	Java is an option installed by LXE. Tapping the desktop icon displays information on the Java version installed.
	Access programs, select from the Favorites listing, documents last worked on, change/view settings for the control panel or taskbar, on-line help or run programs.

Taskbar Icons



The number and type of icons displayed in the taskbar are based on the device type, installed options and configuration of the MX8.

My Device Folders

Folder	Description	Preserved upon Reboot?
Application Data	Data saved by running applications	No
My Documents	Storage for downloaded files / applications	No
Network	Mounted network drive	No
Program Files	Applications	No
System	Internal SD Flash Card (CAB file storage)	Yes
Temp	Location for temporary files	No
Windows	Operating System in Secure Storage	No

Wavelink Avalanche Enabler (Optional)

Note: If the user is NOT using Wavelink Avalanche to manage their mobile device, the Enabler should not be installed on the mobile device(s).

The following features are supported by the Wavelink Avalanche Enabler when used in conjunction with the Avalanche Manager.

After configuration, Enabler files are installed upon initial bootup and after a hard reset. Network parameter configuration is supported for:

- IP address: DHCP or static IP
- RF network SSID
- DNS hosts (primary, secondary, tertiary)
- Subnet mask
- Enabler update

Related Manual: "Using Wavelink Avalanche on LXE Windows Computers".

The MX8 has the Avalanche Enabler installation files loaded, but not installed, on the mobile device when it is shipped from LXE. The installation files are located in the System folder on CE devices. The installation application must be run manually the first time Avalanche is used.

After the installation application is manually run, a reboot is necessary for the Enabler to begin normal performance. Following this reboot, the Enabler will by default be an auto-launch application. This behavior can be modified by accessing the Avalanche Update Settings panel through the Enabler Interface.

The designation of the mobile device to the Avalanche CE Manager is LXE_MX8.

LXE CE devices manufactured before October 2006 must have their drivers and system files upgraded before they can use the Avalanche Enabler functions. Contact your LXE representative for details on upgrading the mobile device baseline.

Internet Explorer

Start | Programs | Internet Explorer

This option requires a radio card and an Internet Service Provider. There are a few changes in the Windows CE version of Internet Explorer as it relates to the general desktop Windows PC Internet Explorer options. Tap the "?" button to access Internet Explorer Help.

Start Menu Program Options

The following options represent the factory default program installation. Your system may be different based on the software and hardware options purchased.

Communication		Stores Network communication options
	ActiveSync	Transfer files between a MX8 and a desktop computer
	Connect	Run this command after setting up a connection
	Start FTP Server	Begin connection to FTP server
	Stop FTP Server	End connection to FTP server
Microsoft File Viewers		View downloaded files (see Note)
	Excel Viewer	View Excel 97 and newer documents
	Image Viewer	View BMP, JPEG and PNG images
	PDF Viewer	View Adobe Acrobat documents
	Word Viewer	View Word 97 and newer documents and RTF files
Summit		Set Summit radio / network parameters
Command Prompt		The command line interface in a separate window
Inbox		Microsoft Outlook mail inbox
Internet Explorer		Access web pages on the world wide Internet
Java		Option
RFTerm		Option. Terminal emulation application.
Media Player		Digital media player for movie and audio files.
Microsoft WordPad		Opens an ASCII notepad
Remote Desktop Connection		Log on to a Windows Terminal Server
Transcriber		Enter data using the stylus on the touchscreen
Wavelink Avalanche		Option. Remote management for networked devices
Windows Explorer		File management program

Note: The Microsoft File Viewers cannot display files that have been password protected.

- If installed, RFTerm runs automatically at the conclusion of each reboot.
- If installed and enabled, AppLock runs automatically at the conclusion of each reboot.
- The wireless client connects automatically during each reboot.
- Bluetooth re-connects to nearby paired devices automatically at the conclusion of each reboot.
- If installed and pre-configured, Wavelink Avalanche connects remotely and downloads updates automatically during each reboot.

Communication

Start | Programs | Communication

ActiveSync

ActiveSync is pre-loaded on all LXE mobile devices.

Using Microsoft ActiveSync you can copy files from your MX8 to your desktop computer , and vice versa.

Once an ActiveSync relationship (partnership) has been established with Connect (on a desktop computer), ActiveSync will synchronize using the wireless link, serial port, the infrared port, or USB on the MX8.

Connect

Connect the modem cable to the PC (the host) and the mobile device (the client). Select “Connect” from the Start Menu on the mobile device (Start | Programs | Communications | Connect).

Note: Run “Connect” when the “Get Connected” wizard on the host PC is checking COM ports to establish a connection for the first time.

Note: USB synchronization will start automatically when the cable is connected, not requiring you to select “Connect” from the Start menu.

Start FTP Server / Stop FTP Server

These shortcuts call the Services Manager to start and stop the FTP server. The server defaults to Off (for security) unless it is explicitly turned on from the menu.

Microsoft File Viewers

The following applications are included:

- Word Viewer
- Excel Viewer
- PDF Viewer
- Image Viewer

Note: The viewer applications allow viewing documents, but not editing them.

Java (Optional)

Installed by LXE. Files can be accessed by tapping **Start | Programs | JEM-CE**. Doubletap the EVM icon to open the EVM Console. A folder of Java examples and Plug-ins is also installed with the Java option. LXE does not support Java applications running on the mobile device.

Summit

Use this option to setup radio client profiles.

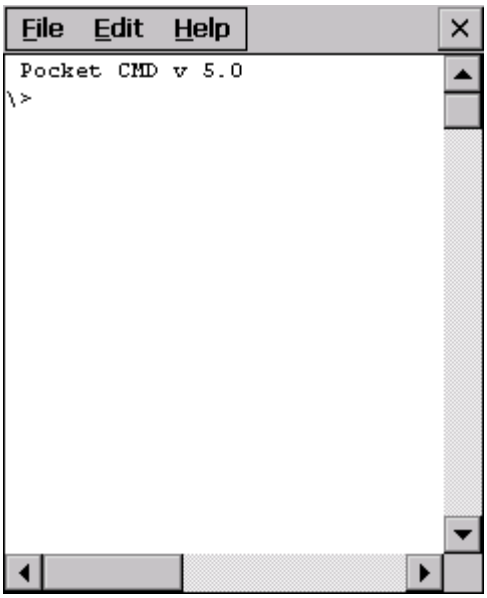
The Summit Control Panel can be accessed by tapping Start | Settings | Control Panel | Summit or by doubletapping the Summit icon in the taskbar or on the desktop.

Certs

The Certs option displays a readme file containing details on how the Summit Configuration Utility (SCU) handles certificates for WPA authentication.

Command Prompt

Start | Programs | Command Prompt



Pocket CMD Prompt Screen

Type help at the command prompt for a list of available commands.

Exit the Command Prompt by typing **exit** at the command prompt or select **File | Close.**

eXpress Scan

The eXpress Scan utility allows an administrator to scan barcodes to provide the initial network and Avalanche Mobile Device Server address configuration. This eliminates the need to edit radio parameters manually on the MX8.

eXpress Scan uses barcodes created with eXpress Config.

Internet Explorer

Start | Programs | Internet Explorer

This option requires a radio card and an Internet Service Provider. There are a few changes in the Windows CE version of Internet Explorer as it relates to the general desktop Windows PC Internet Explorer options. Tap the “?” button to access Internet Explorer Help.

Media Player

There are few changes in the Windows CE version of Media Player as it relates to the general desktop Windows PC Microsoft Media Player options.

The Media Player on the MX8 can be accessed by clicking **Start | Programs | Media Player**. Click the "?" button to access Media Player Help.

Microsoft Wordpad

Start | Programs | Microsoft WordPad

Create and edit documents and templates in WordPad, using buttons and menu commands that are similar to those used in the desktop PC version of Microsoft WordPad.

By default WordPad files are saved as .PWD files. Documents can be saved in other formats e.g. .RTF or .DOC.

Tap the ? button to access WordPad Help.

Remote Desktop Connection

There are few changes in the Windows CE version of Remote Desktop Connection as it relates to the general desktop Windows PC Microsoft Remote Desktop Connection options.

If installed, Remote Desktop Connection on the MX8 can be accessed by **Start | Programs | Remote Desktop Connection**.

Select a computer from the drop down list or enter a host name and tap the Connect button.

Tap the Options >> button to access the General, Display, Local Resources, Programs and Experience tabs. Tap the "?" button to access Remote Desktop Connection Help.

Transcriber

Start | Programs | Transcriber

Select Transcriber on the Start | Programs menu. To make changes to the Transcriber application, enable or disable the current Transcriber session, etc., tap the "hand with a pen" icon in the toolbar. Tap the "?" button or the Help button to access Transcriber Help.

Windows Explorer

Start | Programs | Windows Explorer

There are a few changes in the Windows CE version of Windows Explorer as it relates to the general desktop PC Windows Explorer options. Tap the "?" button to access Windows Explorer Help.

Taskbar

Start | Settings | Taskbar and Start Menu

There are a few changes in the Windows CE version of Taskbar as it relates to the general desktop PC Windows Taskbar options. When the taskbar is auto hidden, press the Ctrl key then the Esc key to make the Start button appear.

General Tab

Factory Default Settings	
Always on Top	Enabled
Auto hide	Disabled
Show Clock	Enabled

Taskbar Properties, General Tab

Advanced Tab

Taskbar Properties, Advanced Tab

Expand Control Panel

Tap the checkbox to have the Control Panel folders appear in drop down menu format from the Settings | Control Panel menu option.

Clear Contents of Document Folder

Tap the Clear button to remove the contents of the Document folder.

Taskbar Icons

As MX8 devices and applications open and change state, icons are placed in the Taskbar. In most cases, tapping the icon in the Taskbar opens the related application.

Refer to Start | Help for an explanation of standard Windows CE taskbar icons.

Following are a few of the MX8 and LXE unique taskbar icons that may appear in the Taskbar. These icons are in addition to the Windows CE taskbar icons.

Taskbar Icon	Activity
	Wireless Zero Config Inactive / Connected / Not Connected. Clicking on the icon opens the Wireless Zero Config utility.
	Bluetooth connected / disconnected. Clicking the icon opens the Bluetooth control panel.
	ActiveSync Connection
	Summit Client signal indicator no signal/ excellent signal. Clicking on the icon opens the Summit Client Utility.
	Battery charge indicator. Percent of battery charge is indicated.
	External power connected
	Current time. Clicking the time display opens the Date/Time control panel.
	Click this icon to return to the Desktop.
	AppLock switchpad.
	Input method, keyboard / input panel / transcriber
	CapsLock active
	No modifier key is in focus
	Orange modifier key active
	Blue modifier key active
	Shift modifier key active

Taskbar Icon	Activity
	Multiple modifier keys active, Shift plus Blue

Using ActiveSync

Introduction

Once a relationship (partnership) has been established with Connect (on a desktop computer), ActiveSync will synchronize using the wireless link, serial port, or USB on the MX8.

Requirement : ActiveSync version 3.8 (or higher) must be resident on the host (desktop/laptop) computer. ActiveSync for the PC is available from the Microsoft website. Follow their instructions to locate, download and install ActiveSync on your desktop computer.

Using Microsoft ActiveSync version 3.8 or higher, you can synchronize information on your desktop computer with the MX8 and vice versa. Synchronization compares the data on your mobile device with your desktop computer and updates both with the most recent data.

For example, you can:

- Back up and restore your device data.
- Copy (rather than synchronize) files between your device and desktop computer.
- Control when synchronization occurs by selecting a synchronization mode. For example, you can synchronize continually while connected to your desktop computer or only when you choose the synchronize command.

By default, ActiveSync does not automatically synchronize all types of information. Use ActiveSync Options to specify the types of information you want to synchronize. The synchronization process makes the data (in the information types you select) identical on both your desktop computer and your device.

When installation of ActiveSync is complete on your desktop computer, the ActiveSync Setup Wizard begins and starts the following processes:

- connect your device to your desktop computer,
- set up a partnership so you can synchronize information between your device and your desktop computer, and
- customize your synchronization settings.

Because ActiveSync is already installed on your device, your first synchronization process begins automatically when you finish setting up your desktop computer in the ActiveSync wizard. For more information about using ActiveSync on your desktop computer, open ActiveSync, then open ActiveSync Help.

Initial Setup

The initial setup of ActiveSync must be made via a USB or serial connection. When there is a Connect icon on the desktop, this section can be bypassed.

Partnerships can only be created using direct serial or USB cable connection. After the partnerships are established, ActiveSync communication can be initiated using:

- USB
- Serial
- Wireless

Connect via USB

The default connection type is **USB Client**

To change the connection type or to verify it is set to USB, select

Start | Settings | Control Panel | PC Connection

Tap the Change button. From the popup list, choose

USB Client

This will set up the mobile device to use the USB port. Tap OK and ensure the check box for “Allow connection with desktop computer when device is attached” is checked.

Tap OK to return to the Control Panel. If desired, any control panel windows may be closed.

IMPORTANT – DO NOT PUT THE MOBILE DEVICE INTO SUSPEND WHILE CONNECTED VIA USB. The device will be unable to connect to the host PC when it resumes operation.

Connect the correct cable to the PC (the host) and the mobile device (the client) as detailed below. USB will start automatically when the USB cable is connected, not requiring you to select “Connect” from the start menu.

Cable for USB ActiveSync Connection:

MX8051CABLE - MX8 Charge/Comm Interface Cable with USB Client port for ActiveSync. USB end of cable connects to PC/Laptop USB port.

- Connect the MX8 end of the cable to the I/O port on the bottom of the MX8
- The USB type A connector on the cable connects to a USB port on a PC or laptop.
- It is not necessary to connect the power connector on the cable in order to use ActiveSync.

Connect and Communicate

Start | Settings | Control Panel | PC Connection

The connection type must be changed to **Serial 1 @ 57600**.

Tap the Change button. From the popup list, choose

Serial 1 @ 57600

This will set up the mobile device to use the serial port. Tap OK and ensure the check box for “Allow connection with desktop computer when device is attached” is checked.

Tap OK to return to the Control Panel. If desired, any control panel windows may be closed.

Select Start | Settings | Control Panel | Scanner and ensure the integrated scanner is set to a port that is NOT the same as the ActiveSync port.

Connect the correct cable to the PC (the host) and the mobile device (the client). Select “Connect” from the Start Menu on the client (Start | Programs | Communications | Connect).

Note: Run “Connect” when the “Get Connected” wizard on the host PC is checking COM ports to establish a connection for the first time.

Cable for Serial ActiveSync Connection

MX8055CABLE - MX8 Charge/Comm Interface Cable with serial connector to connect to PC/Laptop serial port.

- Connect the MX8 end of the cable to the I/O connector on the bottom of the MX8.
- Connect the serial port cable end to a COM port on a PC or laptop.
- It is not necessary to connect the power connector on the cable in order to use ActiveSync.

Wireless Connection

Note: You must establish a partnership with a desktop computer prior to running ActiveSync on the mobile device. The initial partnership must be done using direct serial or USB cable connection.

Once the relationship is established using the serial port, the ActiveSync link in the Start Menu gives a choice of connections, one of which is Network.

Select Start | Settings | Programs | Communication | ActiveSync. From the popup list, choose **Network** and then tap the **Connect** button.

Synchronizing from the Mobile Device

To synchronize using a wireless LAN card, you must have set up ActiveSync on your desktop computer and completed the first synchronization process before you initiate synchronization from your device.

To initiate synchronization from your device, tap Start | Programs | Communication | ActiveSync to begin the process.

Tap **Sync** to connect and synchronize. View synchronization status.

Tap **Tools** to synchronize or change synchronization settings. View connection status.

Tap **Stop** to stop synchronization.

Tap **Start | Help** for context-sensitive help.

Explore

From the ActiveSync Dialog on the Desktop PC, tap the Explore button, which allows you to explore the mobile device from the PC side, with some limitations. You can copy files to or from the mobile device by drag-and-drop. You will not be allowed to delete files or copy files out of the \Windows folder on the mobile device. (Technically, the only files you cannot delete or copy are ones marked as system files in the original build of the Windows image. This, however, includes most of the files in the \Windows folder).

Backup Data Files using ActiveSync

Use the following information to backup data files from the mobile device to a desktop or laptop PC using the appropriate cables and Microsoft's ActiveSync.

Prerequisites

A partnership between the mobile device and ActiveSync has been established. See section "ActiveSync – Initial Setup".

Serial Port Transfer

- A desktop or laptop PC with an available serial port and a mobile device with a serial port. The desktop or laptop PC must be running Windows NT or greater.
- Null modem cable with all control lines connected. LXE recommends using the null modem cable part number listed in Connect and Communicate.

USB Transfer

- A desktop or laptop PC with an available USB port and a mobile device with a USB port. The desktop or laptop PC must be running Windows 98 SR2 or greater.
- Use the LXE-specific USB cable as listed in Connect Via USB.

Connect

Connect the modem cable to the PC (the host) and the mobile device (the client). Select "Connect" from the Start Menu on the mobile device (Start | Programs | Communications | Connect).

Note: Run "Connect" when the "Get Connected" wizard on the host PC is checking COM ports to establish a connection for the first time.

Note: USB synchronization will start automatically when the cable is connected, not requiring you to select "Connect" from the Start menu.

Disconnect

USB Connection

- Disconnect the cable from the mobile device.
- Tap the status bar icon in the lower right hand corner of the status bar. Then tap the Disconnect button.

IMPORTANT – Do not put the mobile device into Suspend while connected via USB. The device will be unable to connect to the host PC when it resumes operation.

Serial Connection

- Disconnect the cable from the mobile device.
- Put the mobile device into Suspend.
- Tap the status bar icon in the lower right hand corner of the status bar. Then tap the Disconnect button.

Network Connection

- Put the mobile device into Suspend.
- Tap the status bar icon in the lower right hand corner of the status bar. Then tap the Disconnect button.

Troubleshooting ActiveSync

ActiveSync on the host says that a device is trying to connect, but it cannot identify it

One or more control lines are not connected. This is usually a cable problem, but on a laptop or other device, it may indicate a bad serial port.

If the MX8 is connected to a PC by a cable, disconnect the cable from the MX8 and reconnect it again.

Check that the correct connection is selected (Serial or USB “Client” if this is the initial ActiveSync installation).

See Also: “Cold Boot and Loss of Host Reconnection”.

ActiveSync indicator on the host (disc in the toolbar tray) turns green and spins as soon as you connect the cable, before tapping the Connect icon (or REPLLOG.EXE in the Windows directory).

One or more control lines are tied together incorrectly. This is usually a cable problem, but on a laptop or other device, it may indicate a bad serial port.

ActiveSync indicator on the host turns green and spins, but connection never occurs

Baud rate of connection is not supported or detected by host. Check that the correct connection is selected (Serial or USB “Client” if this is the initial ActiveSync installation).

-or-

Incorrect or broken data lines in cable.

ActiveSync indicator on the host remains gray

The host doesn’t know you are trying to connect. May mean a bad cable, with no control lines connected, or an incompatible baud rate. Try the connection again, with a known good cable.

Testing connection with a terminal emulator program, or a serial port monitor

You can use HyperTerminal or some other terminal emulator program to do a rough test of ActiveSync. Set the terminal emulator to 8 bits, no parity, 1 stop bits, and the same baud rate as the connection on the CE device. After double-tapping REPLLOG.EXE on the CE device, the word “CLIENT” appears on the display in ASCII format. When using a serial port monitor, you see the host echo “CLIENT”, followed by “SERVER”. After this point, the data stream becomes straight (binary) PPP.

Cold Boot and Loss of Host Re-connection

ActiveSync assigns a partnership between a client and a host computer. A partnership is defined by two objects – a unique computer name and a random number generated when the partnership is first created. An ActiveSync partnership between a unique client can be established to two hosts.

When the mobile device is cold booted, the random number is deleted – and the partnership with the last one of the two hosts is also deleted. The host retains the random numbers and unique names of all devices having a partnership with it. Two clients cannot have a partnership with the same host if they have the same name. (Control Panel | System | Device Name)

If the cold booted mobile device tries to reestablish the partnership with the same host PC, a new random number is generated for the mobile device and ActiveSync will insist the unique name of the mobile device be changed. If the mobile device is associated with a second host, changing the name will destroy that partnership as well. This can cause some confusion when re-establishing partnerships with hosts.

Control Panel Options

Start | Settings | Control Panel or My Device | Control Panel link

Note: Change the font displayed on the touchscreen by choosing Start | Settings | Control Panel | Keyboard and then the Key map dropdown list.

Tap the ? button for Help when changing MX8 Control Panel options.

Option	Function
About	Software, hardware, versions and network IP. No user intervention allowed. Integrated scanner type is identified.
About LXE	Software, hardware, versions and network IP. No user intervention allowed.
Accessibility	Customize the way the keyboard, audio, display or mouse function for users with hearing or viewing difficulties.
Administration	LXE AppLock Administration utility.
Battery	View voltage and status of the main and backup batteries.
Bluetooth	Set the parameters for Bluetooth device connections.
Certificates	Manage digital certificates used for secure communication.
COM1	Displays the current settings for the COM1 (I/O) port. See “Scanner”.
Date/Time	Set Date, Time, Time Zone, and Daylight Savings.
Dialing	Connection setup for modem attached to COM port or Compact Flash slot.
Display	Set background graphic and scheme. Set touchscreen and keypad backlight properties and timers.
Input Panel	Select the current key / data input method. Select custom key maps.
Internet Options	Set General, Connection, Security, Privacy, Advanced and Popups options for Internet connectivity.
Keyboard	Select a Key Map (or font). Set key repeat delay and key repeat rate.
Mappable Keys	Assign key presses to Diamond keys.
Mixer	Adjust the input and output parameters – volume, sidetone, and record gain, for headphone, software and microphone.
Mouse	Set the double-tap sensitivity for stylus taps on the touchscreen.
MX8 Options	Set IP version 6 (IPV6) addressing.
Network and Dial Up Options	Set network driver properties and network access properties.
Owner	Set the mobile device owner details (name, phone, etc). Enter notes. Enable / disable Owner display parameters. Enter Network ID for the device – user name, password, domain.
Password	Set OS access password properties for signon and/or screen saver.
PC Connection	Control the connection between the mobile device and a local desktop or laptop computer.
Power	Set Power scheme properties. Review device status and properties.

Option	Function
Regional Settings	Set appearance of numbers, currency, time and date based on country region and language settings.
Remove Programs	Select to remove specific user installed programs in their entirety.
Scanner	LXE Scan Wedge utility. Set scanner key wedge, scanner port, and imager LED illumination options. Assign baud rate, parity, stop bits and data bits for COM1 port. Assign scanned barcode data manipulation parameters.
Stylus	Set double-tap sensitivity properties and/or calibrate the touch panel.
System	Review System and Computer data and revision levels. Adjust Storage and Program memory settings. Enter device name and description. Review copyright notices.
Volume and Sounds	Enable / disable volume and sounds. Set volume parameters and assign sound WAV files to events.
WiFi	Set the parameters for a Summit client.

About

Start | Settings | Control Panel | About

The data cannot be edited by the MX8 user on these panels.

Tab	Contents
Software	GUID, Windows CE Version, OAL Version, Bootloader Version, Compile Version, and Language. Language indicates any pre-installed Asian fonts.
Hardware	CPU Type, Codec Type, Scanner type, Display, Flash memory, and DRAM memory
Versions	Revision level of LXE software modules and .NET Compact Framework Version.
Network IP	Current network connection IP and MAC address. Only the first 2 network ports are shown (usually radio and ActiveSync).

Version window information is retrieved from the registry.

Version Tab and the Registry

Modify the Registry using the Registry Editor. LXE recommends caution when editing the Registry and also recommends making a backup copy of the registry before changes are made.

The registry settings for the Version tab are under HKEY_LOCAL_MACHINE \ Software \ LXE \ Version in the registry.

To add a user application to the Version panel, create a new string value under the HKLM\Software\LXE\Version key. The string name should be the Application name to appear in the Version window. The data for the value should be the version number to appear in the Version window .

Version strings can be equal to or less than 254 characters. Because the strings are displayed in a text box, any number can be accommodated, up to the 64K byte text box limitation.

Language and Fonts

The Software tab displays any fonts built into the OS image. The fonts built into the OS image are noted in the Language section of this tab:

- English only – No additional fonts are built into the OS
- Japanese
- Simplified Chinese
- Traditional Chinese
- Korean

The above listed Asian fonts are ordered separately and built-in to the OS image. Built-in fonts are added to registry entries and are available immediately upon startup. Thai, Hebrew, Arabic and Cyrillic Russian fonts are available in the (English only) default (extended) fonts.

When an Asian font is copied into the fonts folder on the /System folder; the font works for Asian web pages, the font works with RFTerm, the font does not work for Asian options in Regional Settings control panel, the font does not work for naming

desktop icons with Asian names, the font does not work for third-party CE applications, the font does not work for some third-party MFC applications.

Identifying Software Versions

The Versions tab displays the versions of many of the software programs installed. Not all installed software installed on the mobile device is included in this list and the list varies depending on the applications loaded on the MX8. The LXE Image line displays the revision of the system software installed. Refer to the last three digits to determine the revision level.

MAC Address

The Network IP tab displays the MAC address of the network card.

About LXE

Start | Settings | Control Panel | About LXE

The data cannot be edited by the MX8 user on these panels.

Tab	Contents
Software	GUID, Windows CE Version, OAL Version, Bootloader Version, Compile Version, and Language. Language indicates any pre-installed Asian fonts.
Hardware	CPU Type, Codec Type, Scanner type, Display, Flash memory, and DRAM memory
Versions	LXE Utilities, LXE Drivers, LXE Image, LXE API, Internet Explorer, and .NET Framework Version.

User application version information can be shown in the Version window. Version window information is retrieved from the registry.

Modify the Registry using the Registry Editor . LXE recommends caution when editing the Registry and also recommends making a backup copy of the registry before changes are made.

The registry settings for the Version tab are under HKEY_LOCAL_MACHINE \ Software \ LXE \ Version in the registry.

To add a user application to the Version panel, create a new string value under the HKLM\Software\LXE\Version key. The string name should be the Application name to appear in the Version window. The data for the value should be the version number to appear in the Version window .

Version strings can be equal to or less than 254 characters. Because the strings are displayed in a text box, any number can be accommodated, up to the 64K byte text box limitation.

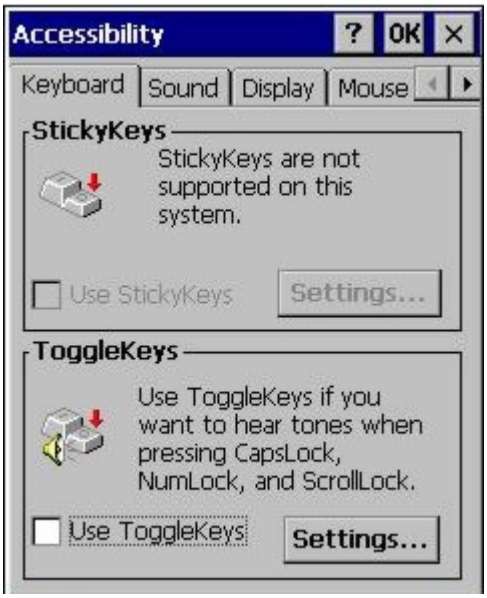
Accessibility

Start | Settings | Control Panel | Accessibility

Customize the way the MX8 keyboard, sound, display, mouse, automatic reset and notification sounds function. There are a few changes from general Windows desktop Accessibility options.

Note: LXE disables the keypad StickyKeys and StickyKeys Settings on the Keyboard panel as this setting, when enabled, interferes with LXE's assigned sticky key implementation.

Tab	Contents
Keyboard	Sticky Keys - Disabled. ToggleKeys - Disabled by default. Tap the *Use ToggleKeys* checkbox to enable this option. Tap the Settings button to view or change parameters.
Sound	SoundSentry is disabled by default. Tap the *Use SoundSentry* checkbox to enable this option. Tap the Settings button to view or change parameters.
Display	High Contrast is disabled by default. Tap the *Use High Contrast* checkbox to enable this option. Tap the Settings button to view or change parameters.
Mouse	MouseKeys is disabled by default. Tap the *Use MouseKeys* checkbox to enable this option. Tap the Settings button to view or change parameters.
General	Automatic reset is disabled by default. Tap the *Turn off accessibility features* checkbox to enable this option and use the dropdown option to assign a timer. Notification is enabled by default. Sounds are emitted when turning a feature on or off.



The following exceptions are due to a limitation in the Microsoft Windows CE operating system:

- If the ToggleKeys option is selected, please note that the ScrollLock key does not produce a sound as the CapsLock and NumLock keys do.
- If the SoundSentry option is selected, please note that ScrollLock does not produce a visual warning as the CapsLock and NumLock keys do.

Administration - for AppLock

Introduction

LXE's AppLock is designed to be run on LXE certified Windows CE based devices only. LXE loads the AppLock program as part of the LXE customer installation process.

MX8 AppLock is setup by the Administrator by tapping Start | Settings | Control Panel | Administration.

Configuration parameters are specified by the AppLock Administrator for the mobile device end-user. AppLock is password protected by the Administrator.

End-user mode locks the end-user into the configured application or applications. The end user can still reboot the mobile device and respond to dialog boxes. The administrator-specified applications are automatically launched in the specified order and run in full screen mode when the device boots up.

When the mobile device is reset to factory default values, for example after a cold reset, the Administrator may need to reconfigure the AppLock parameters.

The assumption, in this section, is that the first user to power up a new mobile device is the system administrator.

Note: AppLock Administrator Control panel file Launch option does not inter-relate with similarly-named options contained in other MX8 Control Panels.

Note: A few applications do not follow normal procedures when closing. AppLock cannot prevent this type of application from closing, but is notified that the application has closed. For these applications, AppLock immediately restarts the application (see Auto Re-Launch) which causes the screen to flicker. If this type of application is being locked, the administrator should close all other applications before switching to end-user mode to minimize the screen flicker.

AppLock is updated periodically as new options become available. Contact your LXE representative for assistance, downloads and update availability.

Setup a New Device

LXE devices with the AppLock feature are shipped to boot in Administration mode with no default password, thus when the MX8 is first booted, the user has full access to the device and no password prompt is displayed. After the administrator specifies the applications to lock, a password is assigned and the device is rebooted or the hotkey is pressed, the device switches to end-user mode.

Briefly, the process to configure a new device is as follows:

1. Connect an external power source to the device and press the Power button.
2. Adjust screen display, audio volume and other parameters if desired. Install accessories.
3. Tap Start | Settings | Control Panel | Administration icon.
4. Assign applications on the Control (single application) or Application (dual application) tab screen.
5. Assign a password on the Security tab screen.
6. Select a view level on the Status tab screen, if desired.
7. Tap OK
8. Press the hotkey sequence to launch AppLock and lock the configured application(s)
9. The device is now in end-user mode.

Administration Mode

Administration mode gives full access to the mobile device, hardware and software configuration options.

The administrator must enter a valid password (when a password has already been assigned) before access to Administration mode and configuration options are allowed. The administrator can configure the following options:

- Create/change the keystroke sequence to activate administrator access.
- Create/change the password for administrator access.
- Assign the name of the application, or applications, to lock.
- Select the command line of the application to lock.

In addition to these configuration options, the administrator can view and manage the status logs of AppLock sessions.

Administrator default values for this device:

Administrator Hotkey

Shift+Ctrl+A

Password

none

Application path and name

none

Application command line

none

End User Mode

End-user mode locks the end-user into the configured application or applications. The end user can still reboot and respond to dialog boxes. Each application is automatically launched and runs in full screen mode when the device boots up.

The user cannot unintentionally or intentionally exit the application nor can the end user execute any other applications. Normal application exit or switching methods and all Microsoft defined Windows CE key combinations, such as close (X) icon, File Exit, File Close, Alt-F4, Alt-Tab, etc. are disabled. The Windows CE desktop icons, menu bars, task bar and system trays are not visible or accessible. Task Manager is not available.

If the end-user selects File/Exit or Close from the applications menu bar, the menu is cleared and nothing else happens; the application remains active. Nothing happens when the end-user clicks on the Close icon on the application's title bar and the application remains active.

Note: A few applications do not follow normal procedures when closing. AppLock cannot prevent this type of application from closing, but is notified that the application has closed. For these applications, AppLock immediately restarts the application which causes the screen to flicker. If this type of application is being locked, the administrator should close all other applications before switching to end user mode to minimize the screen flicker.

Windows accelerator keys such as Alt-F4 are disabled.

Passwords

A password must be configured. If the password is not configured, a new device switches into Administration mode without prompting for a password. In addition to the hotkey press, a mode switch occurs if inaccurate information has been configured or if mandatory information is missing in the configuration.

There are several situations that display a password prompt after a password has been configured.

If the configured hotkey is pressed, the password prompt is displayed. In this case the user has 30 seconds to enter a password. If a valid password is not entered within 30 seconds, the password prompt is dismissed and the device returns to end-user mode.

All other situations that present the password prompt do not dismiss the prompt -- this is because the other situations result in invalid end-user operation.

These conditions include:

- If inaccurate configuration information is entered by the administrator, i.e. an application is specified that does not exist.
- If the application name, which is mandatory for end-user mode, is missing in the configuration.
- Invalid installation of AppLock (e.g. missing DLLs).
- Corrupted registry settings.

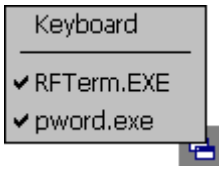
To summarize, if an error occurs that prevents AppLock from switching to user mode, the password will not timeout and AppLock will wait until the correct password is entered.

Forgotten password?

See: Troubleshooting

End-User Switching Technique

Note: The touch screen must be enabled.



Switchpad Menu

A checkmark indicates applications currently active or available for Launching by the user. When Keyboard is selected, the MX8 default input method (Input Panel, Transcriber, or custom input method) is activated.

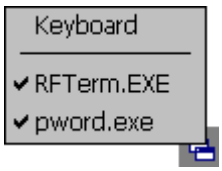
The check to the left of the application name indicates that the application is active.

If the application is listed but does not have a checkmark to the left of the application name, this means the application is configured in AppLock and can be manually launched by clicking on the application name in the list.

Using a Stylus Tap

When the mobile device enters end-user mode, a Switchpad icon (it looks like three tiny windows one above the other) is displayed in the lower right corner of the display. The Switchpad is always visible on top of the application in focus. However, if only one application is configured in AppLock and the Input Panel is disabled the Switchpad is not visible.

When the user taps the Switchpad icon, a menu is displayed showing the applications available to the user. The user can tap an application name in the popup menu and the selected application is brought to the foreground. The previous application continues to run in the background. Stylus taps affect the application in focus only. When the user needs to use the Input Panel, they tap the Keyboard option. Input Panel taps affect the application in focus only.



See Also: Application Panel | Launch | Manual (Launch) and Allow Close

Using the Switch Key Sequence

One switch key sequence (or hotkey) is defined by the administrator for the end-user to use when switching between locked applications. This is known as the Activation key. The Activation key is assigned by the Administrator using the Global Key parameter. When the switch key sequence is pressed on the keypad, the next application in the AppLock configuration is moved to the foreground and the previous application moves to the background. The previous application continues to run in the background. End-user key presses affect the application in focus only.

See Also: Start | Settings | Administration | Application Panel | Global Key

Hotkey (Activation hotkey)

If the mobile device uses LXE's Multi AppLock to allow the user to switch between applications, the default Activation key is **Ctrl+Spc**. The key sequence switches the focus between one application and another. Data entry affects the application running in the foreground only. Note that the system administrator may have assigned a different key sequence to use when switching applications.

End User Internet Explorer (EUIE)

AppLock supports applications that utilize Internet Explorer, such as .HTML pages and JAVA applications. The end user can run an application by entering the application name and path in Internet Explorer's address bar.

To prevent the end user from executing an application using this method, the address bar and Options settings dialog are restricted in Internet Explorer. This is accomplished by creating an Internet Explorer that is used in end user mode: End-user Internet Explorer (EUIE.EXE). The EUIE executes the Internet Explorer application in full screen mode which removes the address bar and status bar. The Options Dialog is also removed so the end user cannot re-enable the address bar.

The administrator specifies the EUIE by checking the Internet checkbox in the Application tab of the Administrator applet. The internet application should then be entered in the Application text box.

When the Internet checkbox is enabled, the Menu and Status check boxes are available.

Enabling the Menu checkbox displays the EUIE menu which contains navigation functions like Back, Forward, Home, Refresh, etc., functions that are familiar to most Internet Explorer users. When the Menu checkbox is blank, the EUIE menu is not displayed and Navigation functions are unavailable.

When the Status checkbox is enabled, the status bar displayed by EUIE gives feedback to the end-user when they are navigating the Internet.

If the standard Internet Explorer that is shipped with the mobile device is desired, it should be treated like any other application. This means that IEXPLORER.EXE should be specified in the Application text box and the internet application should be entered in the command line. In this case, do not check the Internet checkbox.

Application Configuration

Settings | Control Panel | Administration icon

The default Administrator Hotkey sequence is **Shift+Ctrl+A**.

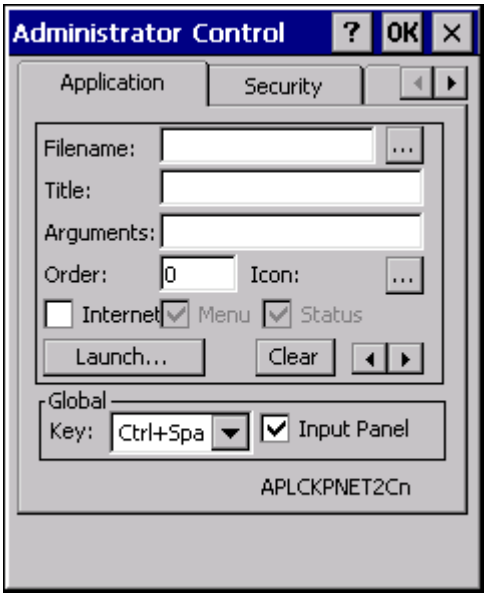
Administrator mode allows access to all features on the device. When the hotkey is pressed to switch into Administrator mode, a password prompt is displayed (if a password has been configured). A password must be entered within 30 seconds (and within three tries) or the password prompt is removed and the device remains in end-user mode with the focus returned to the locked application. Without entry of a valid password, the switch into Administrator mode will not occur.

The password prompt is displayed if a password has been configured. When the valid password is entered, the Administration Control panel is displayed. When a valid password is not entered within 30 seconds, the user is returned to the System Control Panel.

If a password has not been configured, the Administrator Control panel is displayed.

Important: Before setting up multiple instances of the same application, make sure the targeted software application will allow two instances to run at the same time.

Application Panel



Application Panel

Note: If your Application Panel does not look like the figure shown above, you may have the Single Application version.

Use the Application tab options to select the applications to launch when the device boots up in End-user Mode. If no application is specified when the Administrator Control Panel is closed, the mobile device reboots into Administrator mode. If a password has been set, but an application has not been specified, the user will be prompted for the password before entering administration mode. The password prompt remains on the display until a valid password is entered.

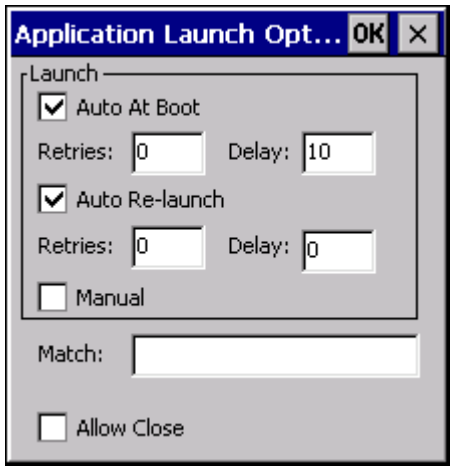
Option	Explanation
Filename	Default is blank. Move the cursor to the Filename text box and either type the application path or tap the Browse button (the … button). The standard Windows CE Browse dialog is displayed. After selecting the application from the Browse dialog, tap OK.
Title	Default is blank. Enter the Title to be associated with the application. The assumption is that multiple copies of the same application may need unique titles in order to differentiate them in the Switchpad.
Arguments	Default is blank. Enter the command line parameters for the application in the Arguments text box.
Order	Default is 1. Enter the Order in which the application is to be loaded or presented to the end-user. Applications are launched in lowest to highest number order and do not need to be sequential.
Internet	Default is Disabled. Enable the Internet checkbox to use the End-user Internet Explorer (EUIE.EXE) When the checkbox is enabled, the Internet Menu and Internet Status are available. See the section titled End-user Internet Explorer (EUIE) for more details.
Launch Button	See following section titled Launch Button. *Note: AppLock Administrator Control panel file Launch option does not inter-relate with similarly-named options contained in other LXE Control Panels.*
Global Key	Default is Ctrl+Spc. Select the Global Key key sequence the end-user is to press when switching between applications. The Global Key default key sequence must be defined by the AppLock Administrator. The Global key is presented to the end-user as the Activation key.

Option	Explanation
Global Delay	Default is 10 seconds. Enter the number of seconds that Applications must wait before starting to run after reboot. *Note: Delay (Global) may not be available in all versions of AppLock. You can simulate a Global Delay function by setting a delay for the first application (lowest Order) launched and setting the delay to 0 for all other applications. See Boot Options.*
Input Panel	Default is Disabled. Enable (check) to show the Keyboard option on the Switchpad menu. When enabled the input panel cannot be enabled or disabled for each individual application, and is available to the user for all configured applications.
Clear Button	Tap the Clear button to clear all currently displayed Filename or Application information. The Global settings are not cleared.
Scroll Buttons	Use the left and right scroll buttons to move from application setup screen to application setup screen. The left and right buttons update the information on the screen with the previous or next configured application respectively.

Launch Button

Note: The Launch button may not be available in all versions of Multi-AppLock. Contact your LXE representative for assistance, downloads and AppLock update availability.

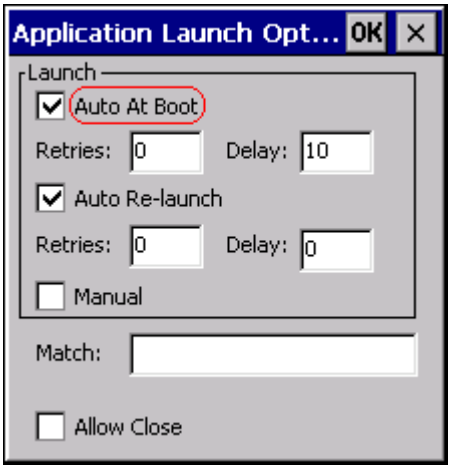
When clicked, displays the Launch options panel for the Filename selected on the Administration panel.



Application Launch Options

Note: Launch order is determined by the Order specified in the Application tab. The Order value does not have to be sequential.

Auto At Boot



Auto At Boot Settings

Default is Enabled.

Auto At Boot

When enabled, automatically launches (subject to the specified Delay in seconds) the application after the unit is rebooted. If a Delay in seconds is specified, AppLock waits for the specified period of time to expire before launching the application. The Delay default value is 10 seconds; valid values are between 0 “no delay” and a maximum of 999 seconds.

Retries

This is the number of times the application launch will be retried if a failure occurs when the application is automatically launched at bootup. Valid values are between 0 (no tries) and 99 tries or -1 for infinite. Infinite tries ends when the application successfully launches. The default is 0 retries.

Delay

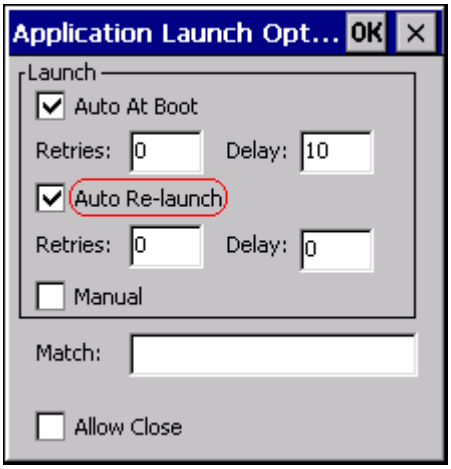
This timer is the time that AppLock waits prior to the initial launch of the selected application when it is automatically launched at bootup. Delay default is 10 seconds. Valid values are between 0 seconds (no delay) and 999 seconds.

The Auto At Boot delay is associated for each application; it will be either a value specified by the Administrator or it will be the delay default value. At startup, when a delay has been assigned for each application, AppLock waits for the delay associated with the first application to expire before launching the first application then AppLock waits for the delay associated with the second application to expire before launching the second application. AppLock continues in this manner until all applications are launched.

Note: A “Global Delay” can be accomplished by setting a timed delay for the first application to be launched (by lowest Order number) and no delay (0 seconds) for all other applications.

Note: Launch order is determined by the Order specified in the Application tab. The Order value does not have to be sequential.

Auto Re-Launch



Auto Re-launch Settings

Auto Re-Launch

Default is Enabled.

When enabled for a specific application. automatically re-launches it (subject to the specified Auto Re-Launch Delay in seconds) after it terminates. This option allows the Administrator to disable the re-launch operation. AppLock cannot prevent all applications from closing. When an application that AppLock cannot prevent from closing terminates, perhaps because of an error condition, AppLock re-launches the application when this option is enabled.

Note: If Allow Close is enabled and both Auto Re-launch and Manual (Launch) are disabled, the application cannot be restarted for the end-user or by the end-user after the application terminates.

Retries

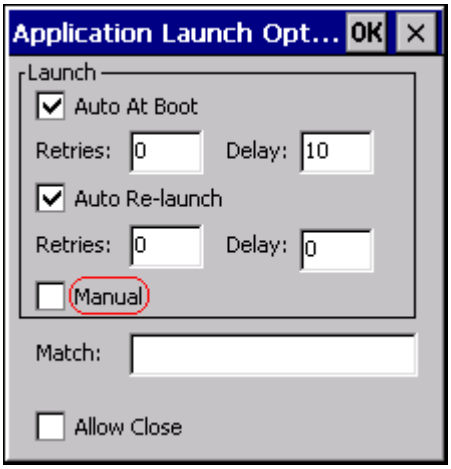
Default is 0 tries. Retries is the number of times AppLock will try to re-launch the application. The retry count is reset after an application is successfully launched and controlled by AppLock. Valid values are between 0 (no tries) and 99 tries or -1 for infinite. Infinite tries ends when the application successfully launches.

Delay

Default is 0 seconds (no delay). Delay is the amount of time AppLock waits prior to re-launching an application that has terminated. The delay is specified in seconds. Valid values are between 0 (no delay) and 99 seconds.

AppLock must also be configured to automatically re-launch an application. To AppLock, application termination by the end-user is indistinguishable from application termination for any other reason.

Manual (Launch)



Manual Launch Checkbox

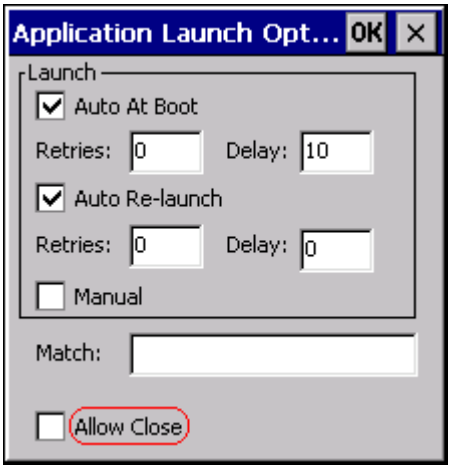
Default is Disabled. Enabling this option allows the end-user to launch the specified application(s). Upon bootup completion an application with Manual enabled is listed on the Switchpad accompanied by a checkmark that indicates the application is currently active or available for Launching. When an application name is tapped by the end-user, the application is launched (if inactive) and brought to the foreground.

Applications set up with Manual (Launch) enabled may or may not be launched at bootup. This function is based on the application's Auto At Boot setting. The applications have been listed as approved applications for end-user manual launch using the Switchpad menu structure. The approved applications are listed on the Switchpad. A checkmark indicates the applications active status.

When Manual (Launch) is disabled for an application, and Allow Close is enabled for the application, when the end-user closes the specific application it is no longer available (shown) on the Switchpad.

When Auto At Boot and Manual (Launch) are both disabled for a specific application, the application is 1) not placed on the list of approved applications for end-user manual launch and 2) never launched, and 3) not displayed on the Switchpad.

Allow Close

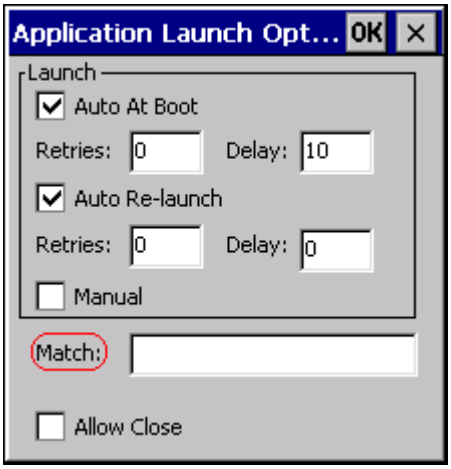


Allow Close Checkbox

Default is Disabled. When enabled, the associated application can be closed by the end-user.

This option allows the administrator to configure applications that consume system resources to be terminated if an error condition occurs or at the end-user's request. Error conditions may generate a topmost popup requiring an end-user response, memory resource issues requiring an end-user response, etc. Also at the administrator's discretion, these types of applications can be started manually (see Manual [Launch]) by the end-user.

Match



Match Textbox

Default is blank (match is not used).

AppLock works by associating display windows with the launched process ID. If an application uses different process IDs for windows it creates, the Match field must be used.

Use the Match field to specify up to 32 characters of the class name for the application.

For example, DOS applications using a standard DOS display box should specify **condev_appcls** in the Match textbox.

Security Panel

Security Panel

Hotkey

Specify the hotkey sequence that triggers AppLock to switch between administrator and user modes and the password required to enter Administrator mode. The default hotkey sequence is **Shift+Ctrl+A**.

A 2nd key keypress is an invalid keypress for a hotkey sequence.

Move the cursor to the Hot Key text box. Enter the new hot key sequence by first pressing the Shift state key followed by a normal key. The hotkey selected must be a key sequence that the application being locked does not use. The hotkey sequence is intercepted by AppLock and is not passed to the application.

Input from the keyboard or Input Panel is accepted with the restriction that the normal key must be pressed from the keyboard when switching modes. The hotkey sequence is displayed in the Hot key text box with “Shift”, “Alt”, and “Ctrl” text strings representing the shift state keys. The normal keyboard key completes the hotkey sequence. The hotkey must be entered via the keypad. Some hotkeys cannot be entered via the Input Panel. Also, hotkeys entered via the SIP are not guaranteed to work properly when switching operational modes.

For example, if the ‘Ctrl’ key is pressed followed by ‘A’, “Ctrl+A” is entered in the text box. If another key is pressed after a normal key press, the hotkey sequence is cleared and a new hotkey sequence is started.

A normal key is required for the hotkey sequence and is unlike pressing the normal key during a mode switch; this key can be entered from the SIP when configuring the key. However, when the hotkey is pressed to switch modes, the normal key must be entered from the keypad; it cannot be entered from the SIP.

Password

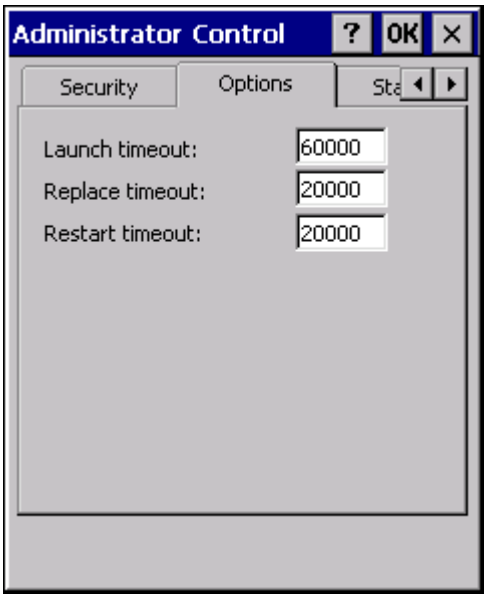
Move the cursor to the Password text box. The passwords entered in the Password and Confirm Password fields must match. Passwords are case sensitive.

When the user exits the Administrator Control panel, the two passwords are compared to verify that they match. If they do not match, a dialog box is displayed notifying the user of the error. After the user closes the dialog box, the Security Panel is displayed and the password can then be entered and confirmed again. If the passwords match, the password is encrypted and saved.

See Also: Passwords and Troubleshooting

Options Panel

AppLock contains several types of delays and timeouts to accommodate different applications. Please note that the delays specified on the Launch panel are delays before AppLock attempts to start the specified application(s). The timesouts specified on this panel are delays after AppLock has attempted to launch the application.



Options Panel

Launch timeout

This timeout specifies the period of time for AppLock to wait for the application to initially launch after the application has been called. For example, if the application takes time to launch and then initialize before a display a window is created, use this delay to specify the delay period.

Replace timeout

This timeout specifies the period of time for AppLock to wait after an initial screen (like a password prompt screen) is replaced by another application window.

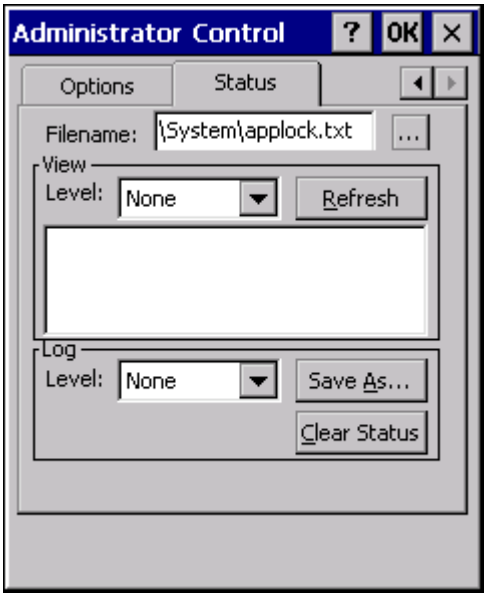
Restart timeout

This specifies the period of time for AppLock to wait for an application to restart. If the application fails to restart automatically, AppLock then proceeds according to the options selected when the application was configured on the Application and Launch panels.

Status Panel

Use the Status panel to view the log of previous AppLock operations and to configure which messages are to be recorded during AppLock operation.

Status information is stored in a specific location on the storage device and in a specific logfile specified by the Administrator. For this reason, the administrator can configure the type of status information that is logged, as well as clear the status information.



Status Panel

Move the cursor to the Filename text box and either type the logfile path or tap the Browse button (the … button). The standard Windows CE Browse dialog is displayed. After selecting the logfile from the Browse dialog, tap OK.

Note: If your Status Panel does not look like the figure shown above, you may have the Single Application version which does not have as many options.

View

Error	Error status messages are logged when an error occurs and is intended to be used by the administrator to determine why the specified application cannot be locked.
Process	Processing status shows the flow control of AppLock components and is mainly intended for LXE Customer Service when helping users troubleshoot problems with their AppLock program.
Extended	Extended status provides more detailed information than that logged by Process Logging.
All	All messages are displayed.

Tap the Refresh button after changing from one view level to another. The filtered records are displayed, all others are not displayed.

Log

Note: If a level higher than Error is selected, the status should be cleared frequently by the administrator.

In addition to the three view levels the administrator can select that all status information be logged or turn off all status information logging completely. The system default is 'None'; however to reduce registry use, the administrator may want to select 'None' after verifying the configuration. Tap the Clear button to clear the status information from the registry.

- None
- Error
- Processing
- Extended
- All

Save As

When the 'Save As'… button is selected, a standard 'Save As' dialog screen is displayed. Specify the path and filename. If the filename exists, the user is prompted whether the file should be overwritten. If the file does not exist, it is created.

See Also: Error Messages

Troubleshooting AppLock

The mobile device won't switch from Administration mode to end-user mode.

- If the configuration is valid for one application but not the other, the switch to end-user mode fails. AppLock stays in Administration mode and is stopped until the Administrator password is entered.
- If two copies of the same application are configured, but the application only allows one copy to run at a time, for example Microsoft Pocket Word and LXE RFTerm, the switch to end-user fails. AppLock stays in Administration mode and is stopped until the Administrator password is entered.

The hotkey sequence needed is not allowed. What does this mean?

When the Administrator is selecting a hotkey sequence to use when switching user modes, they are not allowed to enter key combinations that are reserved by installed software applications. LXE has validated RFTerm key combinations ONLY.

When RFTerm is installed on the mobile device and an RFTerm restricted key sequence is specified as a hotkey sequence by the Administrator, the following error message is displayed in a message box:

```
Selected hotkey is not allowed. Please reenter.
```

When RFTerm is not installed on the mobile device, the RFTerm keys are not restricted from use.

Can't locate the password that has been set by the administrator?

Contact your LXE representative for assistance.

Battery

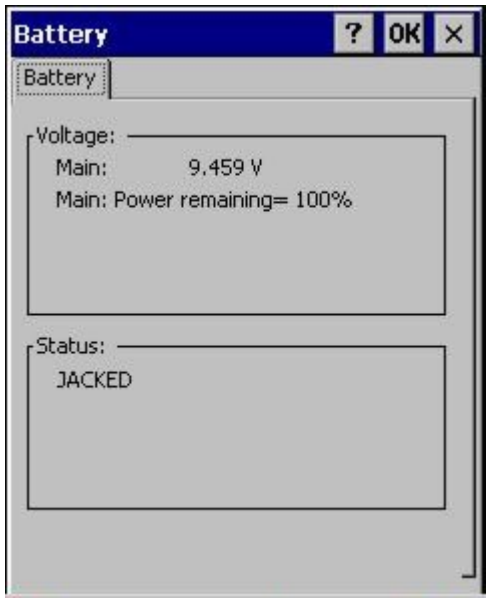
Start | Settings | Control Panel | Battery

This panel is used to view the status and percentage of power remaining in the MX8 main battery. The data cannot be edited by the user.

	The battery gas gauge icon resides in the system tray and shows four levels of charge – 100%, 75%, 50%, 25%. At a point below 50% the system status LED will turn yellow and the gas gauge icon will turn yellow. At a point below 25%, the system status LED will turn red and the gas gauge icon will turn red indicating the battery is low.

Jacked is shown in the Status box when the Main battery is receiving external power.

The main battery is charged/recharged when the MX8 is docked in a powered cradle or directly cabled to an external power source.



The backup battery draws power from the Main battery to maintain a charge. The backup battery voltage and percentage of power fluctuate continuously.

When there is no Main battery in the unit, the backup battery begins to discharge as it maintains RAM and other vital settings. After a Main battery is installed, the backup battery begins to draw power from the Main battery again.

Note: Frequent connection to an external power source, if feasible, is recommended to maintain backup battery charge status as the backup battery cannot be recharged by a dead or missing main battery.

Bluetooth

Start | Settings | Control Panel | Bluetooth

Discover and manage pairing with nearby Bluetooth devices.

Factory Default Settings	
Discovered Devices	None
Settings	
Turn Off Bluetooth	Disabled
Report when connection lost	Enabled
Report when reconnected	Disabled
Report failure to reconnect	Enabled
Computer is connectable	Enabled
Computer is discoverable	Disabled
Prompt if devices request to pair	Disabled
Continuous search	Disabled

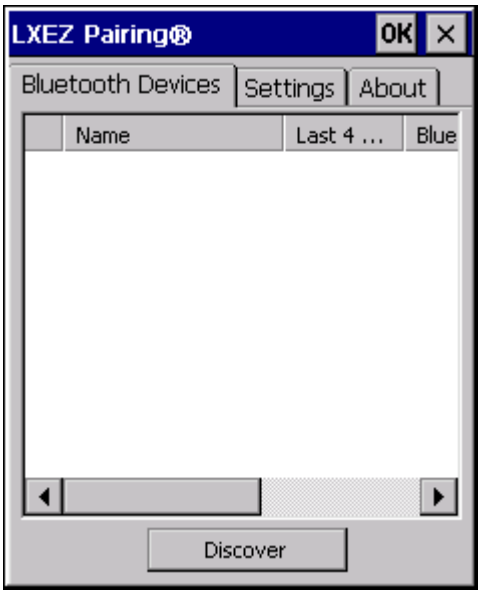
Bluetooth taskbar Icon state and Bluetooth device Icon states change as Bluetooth devices are discovered, pair, connect and disconnect. There may be audible or visual signals as paired devices re-connect with the MX8.

- The default Bluetooth setting is On.
- The MX8 cannot be discovered by other Bluetooth devices when the **Computer is discoverable** option is disabled (unchecked) on the Settings panel.
- Other Bluetooth devices cannot be discovered if they have been set up to be Non-Discoverable or Invisible.
- The MX8 can pair with one Bluetooth scanner and one Bluetooth printer.
- It is not necessary to disconnect a paired scanner and printer before a different scanner or printer is paired with the MX8.
- The target Bluetooth device should be as close as possible (line of sight) to the MX8 during the pairing process.

Assumption:The System Administrator has Discovered and Paired targeted Bluetooth devices for the MX8. The MX8 operating system has been upgraded to the revision level required for Bluetooth client operation.

Bluetooth Devices

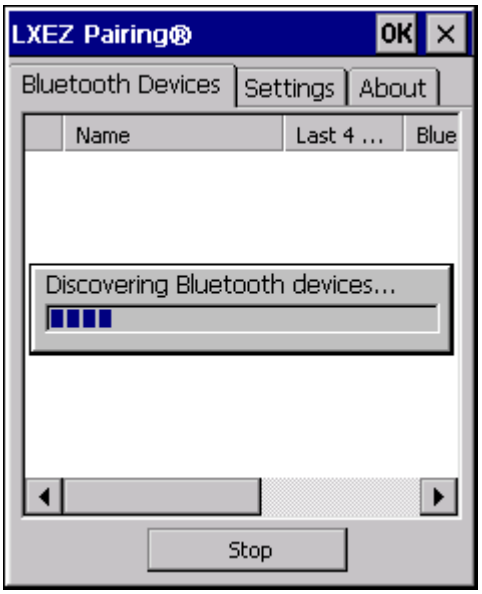
The Bluetooth Devices tab displays any device previously discovered and paired with the MX8.



Bluetooth Devices Panel

Discover

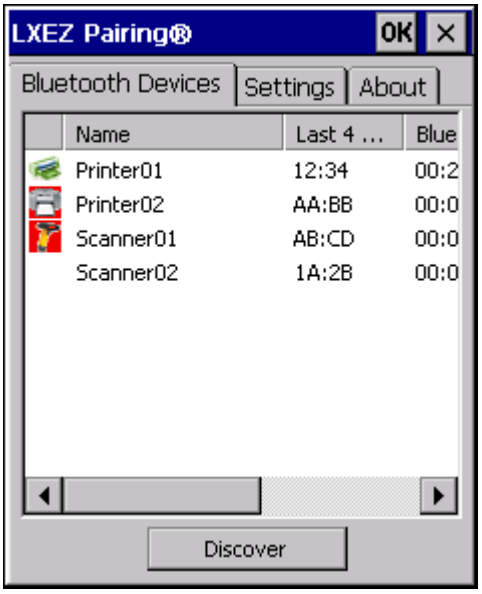
Tap the Discover button to locate all discoverable Bluetooth devices in the vicinity. The Discovery process also queries for the unique identifier of each device discovered.



Discover Bluetooth Devices

Tap Stop at any time to end the Discover and Query for Unique Identifier functions.

Note: When an active paired device enters Suspend Mode, is turned Off or leaves the MX8 Bluetooth scanning range, the Bluetooth connection between the paired device and the MX8 is lost. There may be audible or visual signals as paired devices disconnect from the MX8.



Bluetooth Device List

The discovered paired devices may or may not be identified with an icon. Discovered devices without an icon can be paired as printers or scanners. The Bluetooth panel assigns an icon to the device name.

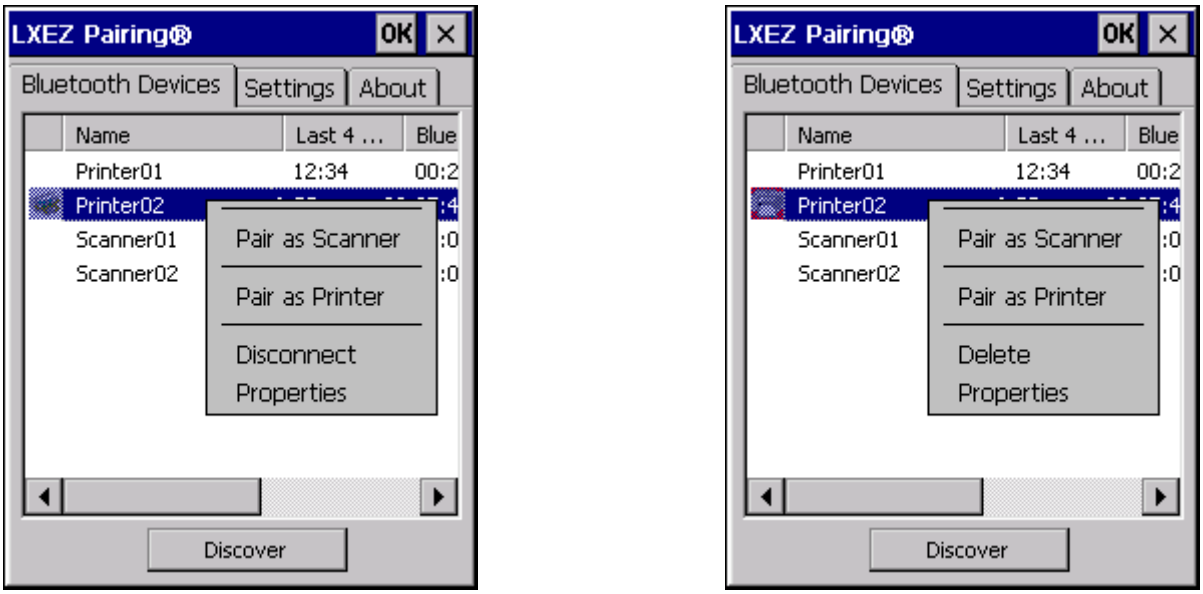
An icon with a red background indicates the device's Bluetooth connection is inactive.

An icon with a white background indicates the device is connected to the MX8 and the device's Bluetooth connection is active.

Double-tap a device in the list to open the device properties menu. The target device does not need to be active.

Bluetooth Device Menu

Doubleclick on a listed device to bring up the Bluetooth device menu.



Bluetooth Device Right Click Menu

Tap **Pair as Scanner** to set up the MX8 to receive data from the scanner.

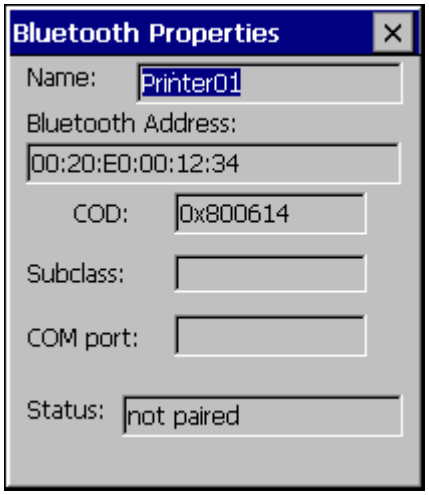
Tap **Pair as Printer** to set up the MX8 to send data to the printer.

Tap **Disconnect** to stop the connection between the MX8 and a paired Bluetooth device.

Tap **Delete** to remove an unpaired device from the Bluetooth device list. The device name and identifier is removed from the MX8 Bluetooth Devices panel after the user taps OK.

Tap **Properties** for more information on the Bluetooth device.

Bluetooth Device Properties

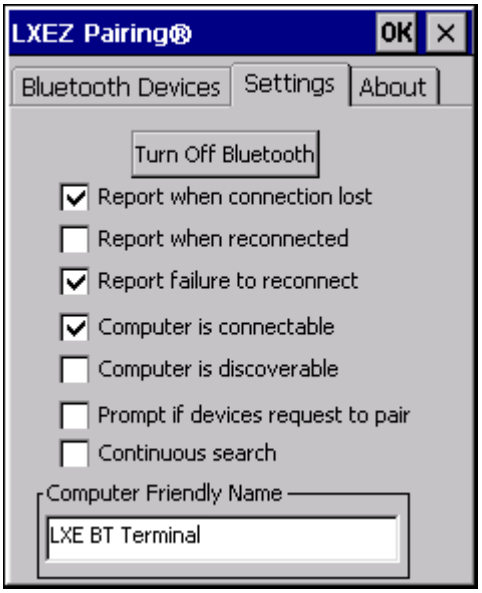


Bluetooth Device Properties Menu

Data on the Bluetooth Properties panel cannot be changed by the user. The data displayed is the result of the device Query performed during the Discovery process.

The Status dialog box reflects the current state of the highlighted device.

Settings



Bluetooth Device Settings Panel

Note: These options can still be checked or unchecked whether Bluetooth connection is enabled or disabled.

Turn Off Bluetooth Button

Tap the button to toggle Bluetooth hardware On or Off.

Default

The default value is Bluetooth On.

Report when connection lost

A dialog box appears on the MX8 display notifying the user the connection between one (or all) of the paired Bluetooth devices has stopped.

Click the OK button or the X button to remove the dialog box from the screen.

Default

This option is enabled by default.

Report when reconnected

A dialog box appears on the MX8display notifying the user a connection between one (or all) of the previously-paired Bluetooth devices is complete. This option is disabled by default.

Click the OK button or the X button to remove the dialog box from the screen.

Default

This option is enabled by default.

Report failure to reconnect

If the reconnect timeout (30 minutes) expires, a dialog box appears on the MX8 display notifying the end-user the connection between one (or all) of the previously-paired Bluetooth devices has failed. This option is enabled by default.

Click the OK button to remove the dialog box from the screen.

Default

This option is enabled by default.

Computer is connectable

There is no dialog connected to this checkbox. Enable this checkbox when you want the MX8 to be able to pair with other Bluetooth devices.

Default

This option is enabled by default.

Computer is discoverable

There is no dialog connected to this checkbox. Enable this checkbox when you want the MX8 to be Discovered by other Bluetooth devices.

Default

This option is disabled by default.

Prompt if devices request to pair

A dialog box appears on the MX8 screen notifying the user a Bluetooth device requests to pair with the MX8. This option is disabled by default.

The requesting Bluetooth device does not need to have been Discovered by the MX8 before the pairing request is received.

Click the Accept button or the Decline button to remove the dialog box from the screen.

Note: In some cases, if a Bluetooth device is already paired this setting cannot be changed. If this is the case, an error message is displayed and the option is not changed. The Bluetooth device must be disconnected before changing this setting.

Default

This option is disabled by default.

Continuous search

When this checkbox is enabled, the MX8 never stops searching for a Bluetooth device it has paired with once the connection is broken (such as the paired device entering Suspend mode, going out of range or being turned off).

When this checkbox is disabled, the MX8 stops searching after one half hour. The search can be restarted by putting the MX8 through a Suspend/Resume cycle or accessing the Bluetooth control panel.

This option is disabled by default.

Default

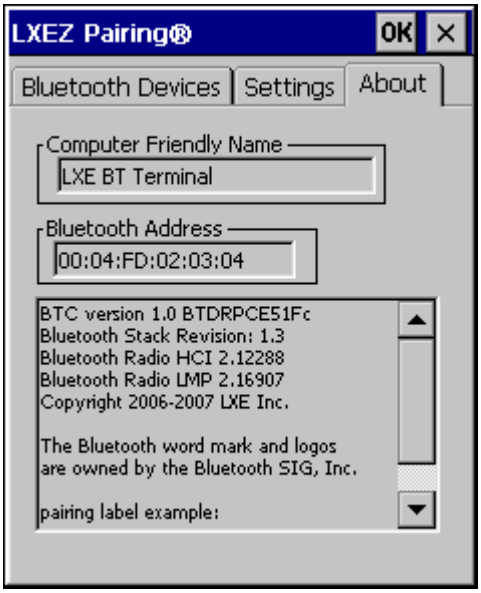
This option is disabled by default.

Computer friendly name

The name, or identifier, entered in this space by the System Administrator is used exclusively by Bluetooth operations.

*Note: The Device Name listed in **Start** | **Settings** | **Control Panel** | **System** | **Device Name** is not used during Bluetooth operation. Owner Identification name listed in **Start** | **Settings** | **Control Panel** | **Owner** | **Identification** is not used during Bluetooth operation.*

About



Bluetooth About Panel

This panel lists the assigned Computer Friendly Name (that other devices may discover during their Discovery and Query process), the Bluetooth MAC address, and software version levels. The data cannot be edited by the user.

Using Bluetooth

Start | Settings | Control Panel | Bluetooth or Bluetooth icon in taskbar or Bluetooth icon on desktop

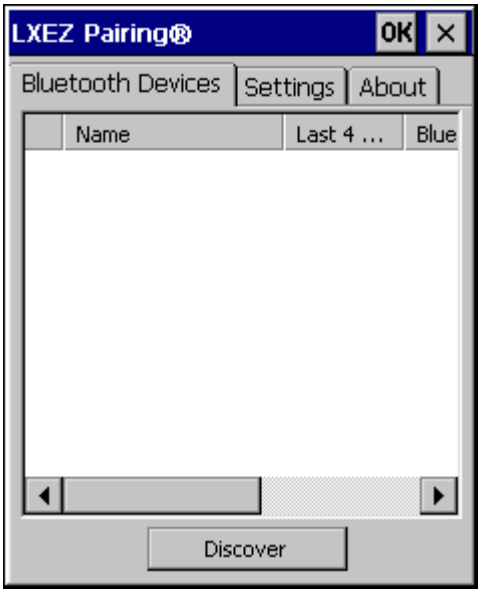
or Tap the Bluetooth icon in the taskbar to open the Bluetooth LXEZ Pairing application.

The MX8 default Bluetooth setting is Enabled.

The LXE MX8 Bluetooth® module is designed to Discover and pair with nearby Bluetooth devices.

Only LXE printers or scanners are recognized and displayed in the Bluetooth panel. All other Bluetooth devices are ignored.

Prerequisite: The Bluetooth devices have been setup to allow them to be "Discovered" and "Connected/Paired". The System Administrator is familiar with the pairing function of the Bluetooth devices.



Bluetooth Devices Display – Before Discovering Devices

Initial Use

1. Select **Start | Settings | Control Panel | Bluetooth** or tap the Bluetooth icon in the taskbar or on the desktop.
2. Tap the Settings Tab.
3. Change the Computer Friendly Name at the bottom of the Settings display. The Bluetooth MX8 default name is determined by the factory installed software version. LXE strongly urges assigning every MX8 a unique name (up to 32 characters) before Bluetooth Discovery is initiated.
4. Check or uncheck the MX8 Bluetooth options on the Settings tab.
5. Tap the OK button to save your changes or the X button to discard any changes.

Subsequent Use

Note: Taskbar and Bluetooth device Icon states change as Bluetooth devices are discovered, pair, connect and disconnect. A taskbar Bluetooth icon with a red background indicates Bluetooth is active and not paired with any device. A device icon with a red background indicates a disconnected paired device.

1. Tap the Bluetooth icon in the taskbar or on the desktop to open the Bluetooth LXEZ Pairing application.
2. Tap the Bluetooth Devices tab.
3. Tap the Discover button. When the Bluetooth module begins searching for in-range Bluetooth devices, the button name changes to Stop. Tap the Stop button to cancel the Discover function at any time.
4. The discovered devices are listed in the Bluetooth Devices window.
5. Highlight a Bluetooth device in the Discovered window and double-tap to open the device properties menu.
6. Tap Pair as Scanner to set up the MX8 to receive scanner data.
7. Tap Pair as Printer to set up the MX8 to send data to the printer.
8. Tap Disconnect to stop pairing with the device. Once disconnected, tap Delete to remove the device name and data from the MX8 Bluetooth Devices list. The device is deleted after the OK button is clicked.
9. Upon successful pairing, the selected device may react to indicate a successful connection. The reaction may be an audio signal from the device, flashing LED on the device, or a dialog box is placed on the MX8 display.
10. Whenever the MX8 is turned On, all previously paired, live, Bluetooth devices in the vicinity are paired, one at a time, with the MX8. If the devices cannot connect to the MX8 before the re-connect timeout time period expires (default is approximately 20 seconds for each paired device) there is no indication of the continuing disconnect state if Report Failure to Reconnect is disabled.

Bluetooth Indicators

The Bluetooth taskbar Icon state changes as Bluetooth devices are discovered, pair, connect and disconnect.

There may be audible or visual signals as paired devices re-connect with the MX8.

Only LXE printers or scanners are recognized and displayed in the Bluetooth panel. All other Bluetooth devices are ignored.

Taskbar Icon	Legend
	Bluetooth module is connected to one or more of the targeted Bluetooth device(s).
	MX8 is not connected to any Bluetooth device. MX8 is ready to connect with any Bluetooth device. MX8 is out of range of all paired Bluetooth device(s). Connection is inactive.

Note: When an active paired device enters Suspend Mode, is turned Off or leaves the MX8 Bluetooth scan range, the Bluetooth connection between the paired device and the MX8 is lost. There may be audible or visual signals as paired devices disconnect from the MX8.

AppLock, if installed, does not stop the end-user from using Bluetooth applications, nor does it stop authorized Bluetooth-enabled devices from pairing with the MX8 while AppLock is in control. .

Bluetooth Barcode Reader Setup

Please refer to the Bluetooth scanner manufacturer's User Guide; it may be available on the manufacturer's web site. Contact your LXE representative for Bluetooth product assistance.

Introduction

LXEsupports several different types of barcode readers. This section describes the interaction and setup for a mobile Bluetooth laser scanner or laser imager connected to the MX8 using Bluetooth functions.

Prerequisites

- The MX8 has the Bluetooth hardware and software installed. An operating system upgrade may be required. Contact your LXE representative for details.
- If the MX8 has a Bluetooth address identifier barcode label affixed, then Bluetooth hardware and software is installed.
- The mobile Bluetooth laser scanner / laser imager battery is fully charged.
- The MX8 main battery is fully charged. Alternatively, the MX8 may be in a powered cradle or cabled to AC/DC power.
- *Important: The barcode numbering examples in this segment are not real and should not be created nor scanned with a Bluetooth scanner.*
- To open the LXEZ Pairing program, tap **Start | Settings | Control Panel | Bluetooth** or tap the Bluetooth icon on the desktop or tap the Bluetooth icon in the taskbar.

Sample Bluetooth Address Barcode Label

Locate the barcode label, similar to the one shown above, attached to the MX8. The label is the Bluetooth address identifier for the MX8.

The mobile Bluetooth scanner / imager requires this information before discovering, pairing, connecting or disconnecting can occur.

Important: The MX8 Bluetooth address identifier label should remain protected from damage (rips, tears, spills, soiling, erasure, etc.) at all times. It may be required when pairing, connecting, and disconnecting new Bluetooth barcode readers.

MX8with Label

If the MX8 has a Bluetooth address barcode label attached, follow these steps:

1. Scan the Bluetooth address barcode label, attached to the MX8, with the LXE Bluetooth mobile scanner.
2. If this is the first time the Bluetooth scanner has scanned the MX8 Bluetooth label, the devices are paired. See section titled "Bluetooth Beep and LED Indications". If the devices do not pair successfully, go to the next step.
3. Open the LXEZ Pairing panel [Start | Settings | Control Panel | Bluetooth].
4. Tap Discover. Locate the Bluetooth scanner in the Discovery panel.
5. Double-tap the stylus on the Bluetooth scanner. The right-mouse-click menu appears.
6. Select Pair as Scanner to pair the MX8 with the Bluetooth mobile scanner.

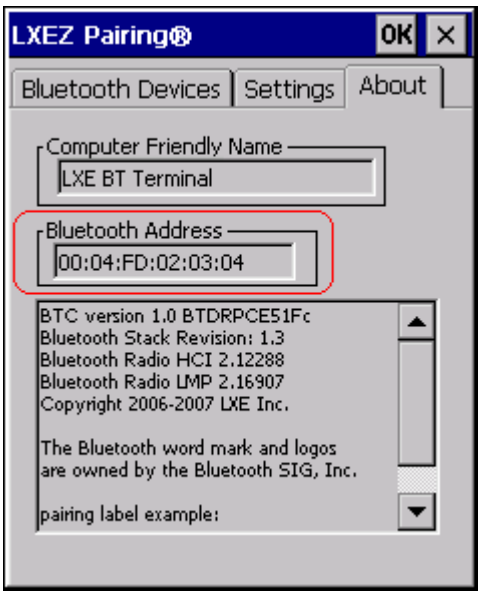
The devices are paired. The Bluetooth barcode reader responds with a series of beeps and an LED flashes. Refer to the following section titled "Bluetooth Beep and LED Indications".

Note: After scanning the MX8 Bluetooth label, if there is no beep and no LED flash from the Bluetooth device, the devices are currently paired.

MX8 without Label

If the MX8 Bluetooth address barcode label does not exist, follow these steps to create a unique Bluetooth address barcode for the MX8:

First, locate the MX8 Bluetooth address by tapping Start | Settings | Control Panel | Bluetooth | About tab.



About Tab and Bluetooth Address

Next, create a Bluetooth address barcode label for the MX8. Free barcode creation software is available for download on the World Wide Web. Search using the keywords “barcode create”.

The format for the barcode label is as follows:

- Barcode type must be Code 128.
- FNC3 character followed by string Uppercase L, lowercase n, lowercase k, uppercase B and then the Bluetooth address (12 hex digits, no colons). For example, LnkB0400fd002031.

Create and print the label.

Scan the MX8 Bluetooth address barcode label with the Bluetooth barcode reader.

The devices are paired. The Bluetooth barcode reader responds with a series of beeps and LED flashes. Refer to the following section titled “Bluetooth Beep and LED Indications”.

Note: After scanning the MX8 Bluetooth label, if there is no beep and no LED flash from the Bluetooth device, the devices are currently paired.

Bluetooth Beep and LED Indications

Beep Type from Bluetooth Device	Behavior
Acknowledge label	1 beep
Label rejected	2 beeps at low frequency
Transmission error	Beep will sound high-low-high-low
Link successful	Beep will sound low-medium-high
Link unsuccessful	Beep will sound high-low-high-low

LED on Bluetooth Device	Behavior
Yellow LED blinks at 2 Hz	Linking in progress
Off	Disconnected or unlinked
Yellow LED blinks at 50 Hz	Bluetooth transmission in progress
Yellow LED blinks at the same rate as the paging beep (1 Hz)	Paging
Green LED blinks once a second	Disabled indication

Upon startup, if the scanner sounds a long tone, this means the scanner has not passed its automatic Selftest and has entered isolation mode. If the scanner is reset, the sequence is repeated. Contact LXE Support for assistance.

Easy Pairing and Auto-Reconnect

The Bluetooth module can establish relationships with new devices after the end-user taps the Discover button. It can auto-reconnect to devices previously known but which have gone out of and then returned within range. Pairing supports SPP devices only.

Up to two Bluetooth devices can be connected to the MX8 at a time; LXE supports one Bluetooth scanner and one Bluetooth printer.

Note: Configuration elements are persistent and stored in the registry.

Setup the Bluetooth module to establish how the user is notified by easy pairing and auto-reconnect events.

AppLock, if installed, does not stop the end-user from using the Bluetooth application, nor does it stop other Bluetooth-enabled devices from pairing with the MX8 while AppLock is in control.

Certificates

Start | Settings | Control Panel | Certificates

Manage digital certificates used for secure communication.

Note: Digital certificates are date sensitive. If the date on the MX8 is incorrect, wireless authentication will fail.

The Certificates stores lists the certificates trusted by the MX8 mobile device user.

These values may change based on the type of network security resident in the client, access point or the host system.

Tap the **Import** button to import a digital certificate file.

Tap the **View** button to view a highlighted digital certificate.

Tap the **Remove** button to remove highlighted certificate files.

Tap the ? button and follow the instructions in the Windows CE Help file when working with trusted authorities and digital certificates.

COM1

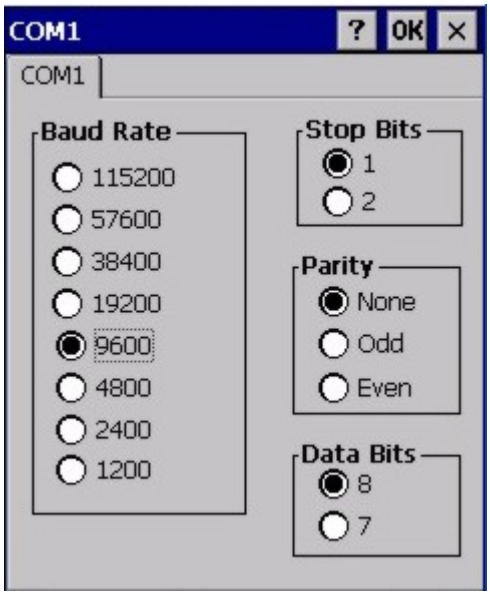
Start | Settings | Control Panel | COM1

COM1 port default values are 9600 Baud, 8 data bits, 1 stop bit and No parity. If these values are changed, the default values are restored after a cold boot or reflashing.

Note: COM1 does not support 5V switchable power on Pin 9 for tethered scanners connected to the I/O port at the base of the MX8.

Factory Default Settings

Baud Rate	9600
Stop Bits	1
Parity	None
Data Bits	8



Date / Time

Start | Settings | Control Panel | Date/Time - or - Time in Desktop Taskbar

Use this MX8 panel to set Date, Time, Time Zone, and assign a Daylight Savings location.

Factory Default Settings

Current Time	Midnight
Time Zone	GMT-05:00
Daylight Savings	Enabled

Date/Time Properties
?
OK
Date/Time
January 2009
S M T W T F S
28 29 30 31 1 2 3
4 5 6 7 8 9 10
11 12 13 14 15 16 17
18 19 20 21 22 23 24
25 26 27 28 29 30 31
1 2 3 4 5 6 7
2:09:32 PM
Time Zone
(GMT-05:00) Eastern Time (US & C
Automatically adjust clock for daylight saving
Apply

There is very little functional change from general desktop or laptop Date/Time Properties options.

Double-tapping the time displayed in the Desktop Taskbar causes the Date/Time Properties screen to appear.

The Sync button activates a utility that will set the clock using a network time server.

Dialing

Start | Settings | Control Panel | Dialing

Set dialup properties for internal modems (not supplied or supported on the MX8 by LXE).

Factory Default Settings

Location	Work
Area Code	425
Tone Dialing	Enabled
Country/Region	1
Disable Call Waiting	Disabled (blank)

Display

Start | Settings | Control Panel | Display

The display might also called the touchscreen.

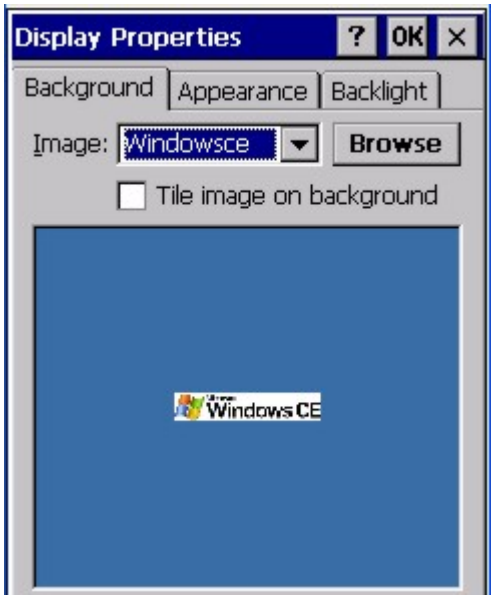
Select the desktop background image and appearance scheme for the MX8. Using the options on the Backlight tab, set the display backlight and keypad backlight timers when running on battery or external power.

Adjust the settings and tap the OK button to save the changes. Saved changes take effect immediately.

Factory Default Settings

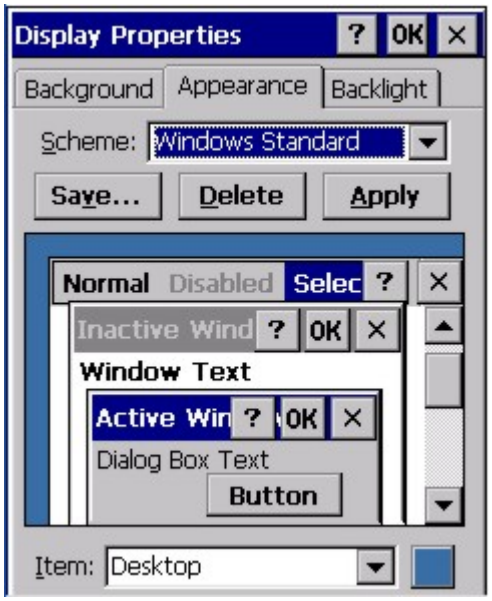
Background	
Image	Windows CE
Image on background	Disabled
Appearance	
Schemes (color displays)	Windows Standard
Schemes (monochrome displays)	High Contrast White
Backlight	
Battery power and user idle	3 seconds
Battery power and System idle	15 seconds
Battery power, idle, Suspend	5 minutes
External power and user idle	2 minutes
External power and System idle	2 minutes
External power, idle, Suspend	2 minutes

Background



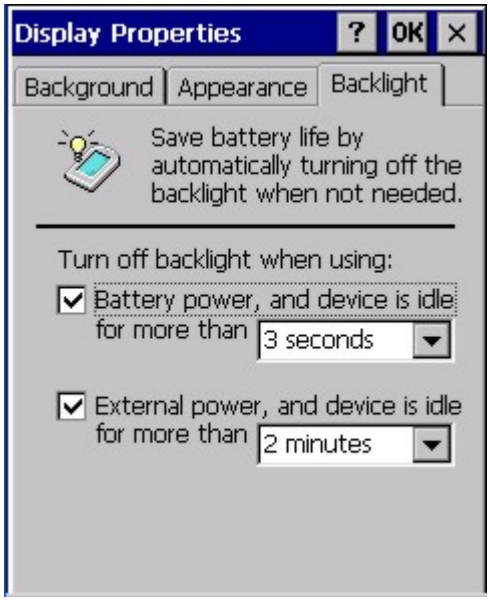
There is very little change from general desktop PC Display Properties / Background options. Select an image from the dropdown list (or tap the Browse button to select an image from another folder) to display on the Desktop, and then tap the OK button to save the change. The change takes effect immediately.

Appearance



There is very little change from general desktop PC Appearance options. Select a scheme from the dropdown list and make changes to the parameters. The default is High Contrast White for monochrome displays and Windows Standard for color displays. Tap the Save button to save any changes, renaming the scheme if desired. Tap the Delete button to delete schemes. Tap the Apply button to apply the selected scheme to the display.

Backlight



The backlight settings use the LXE set of default timeouts and is synchronized to the User Idle setting in the Schemes tab in the Power control panel.

When the backlight timer expires, the touchscreen backlight is dimmed, not turned off. When both checkboxes are unchecked, the backlight never turns off (or dims).

Default values are 3 seconds for Battery, 2 minutes for External and both the check boxes are enabled.

When the **keypad backlight** is set to *Follow the touchscreen backlight*, the keypad backlight turns off when the touchscreen backlight dims.

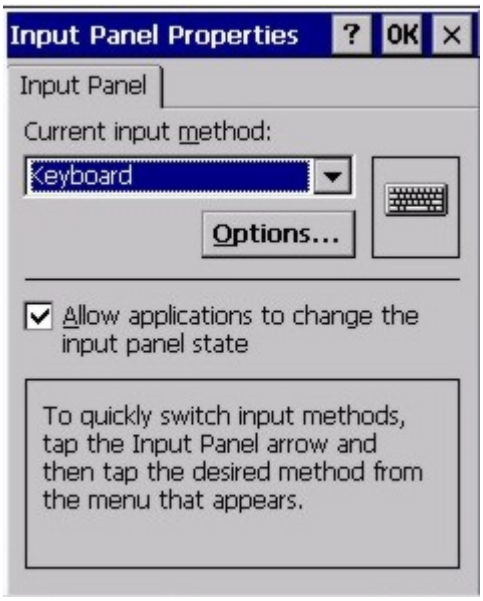
Input Panel

Start | Settings | Control Panel | Input Panel

Set the current MX8 keys and data input method.

Factory Default Settings

Input Method	Keyboard
Allow applications to change input panel state	Enabled
Options button	
Keys	Small keys
Use gestures	Disabled


Input Panel Properties
?
OK
Input Panel
Current input method:
Keyboard
Options...
Allow applications to change the input panel state
To quickly switch input methods, tap the Input Panel arrow and then tap the desired method from the menu that appears.

Use this panel to make the Input Panel (on-screen keyboard) or the physical keypad primarily available when entering data on any screen.

Selecting Keyboard enables both.

Tap the Options button to set the size of the keys displayed on-screen and whether Transcriber gestures are enabled or disabled.

Note: Contact your LXE representative for language packs as they become available.

Internet Options

Start | Settings | Control Panel | Internet Options

Set options for MX8 Internet connectivity.

Select a tab. Tap the ? button for help using Windows CE Help installed in your mobile device. Adjust the settings and tap the OK button. The changes take effect immediately.

Factory Default Settings

General	
Start Page	http://www.lxe.com/
Search Page	http://www.google.com
Cache Size	512Kb
Connection	
Use LAN	Disabled
Autodial Name	Blank
Proxy Server	Disabled
Bypass Proxy	Disabled
Security	
Allow cookies	Enabled
Allow TLS 1.0 security	Disabled
Allow SSL 2.0 security	Enabled
Allow SSL 3.0 security	Enabled
Warn when switching	Enabled
Privacy	
First party cookies	Accept
Third party cookies	Prompt
Session cookies	Always allow
Advanced	
Stylesheets	Enabled
Theming Support	Enable
Multimedia	All options enabled
Security	All options enabled
Popups	
Block popups	Disabled
Display notification	Enabled
Use same window	Disabled

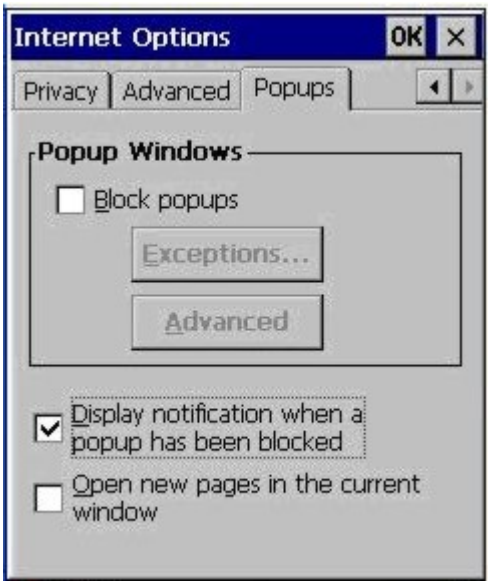
Internet Options
OK
General
Connection
Security
Start Page:
http://www.lxe.com
Search Page:
http://www.google.com
User Agent (requires browser restart):
Default (Windows CE)
Cache Size (in KB):
512
Clear Cache
Clear History

Internet Options
OK
General
Connection
Security
Use LAN (no autodial)
Autodial name:
USB Client
Network
Access the Internet using a proxy server
Address:
Port:
80
Bypass proxy server for local addresses

Internet Options
OK
General
Connection
Security
Internet
Local intranet
Trusted site
Internet
This zone contains all Web sites you haven't placed in other zones
Sites...
Settings...

Internet Options
OK
Connection
Security
Privacy
Cookies
First-party
Third-party
Accept
Block
Prompt
Accept
Block
Prompt
Always allow session cookies

Internet Options
OK
Security
Privacy
Advanced
Popu
Accessibility
Always expand ALT text for
Anchors navigate on access
Browsing
Always send URLs as UTF-8
Display a notification about e
Enable stylesheets
Enable page transitions
Theming support
Disable automatic SIP
Underline links
Never


Internet Options
OK
Privacy
Advanced
Popups
Popup Windows
Block popups
Exceptions...
Advanced
Display notification when a popup has been blocked
Open new pages in the current window

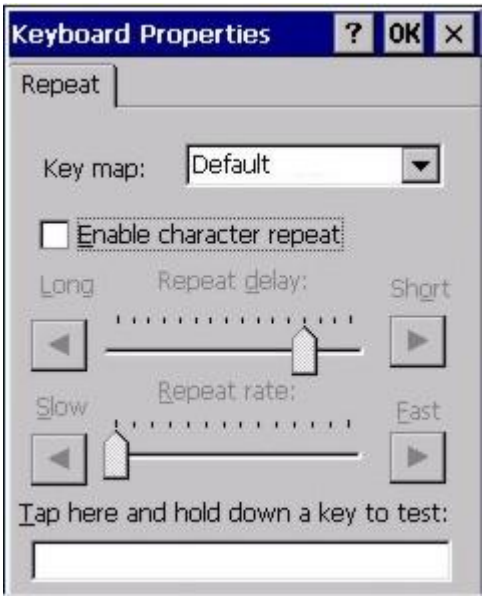
Keyboard

Start | Settings | Control Panel | Keyboard

Set keypad key map, keypad key repeat delay, and key repeat rate.

Factory Default Settings

Repeat Tab	
Key map	Default (or Default MX8)
Repeat character	Enable
Repeat Delay	Short
Repeat Rate	Slow



Select a key map using the drop-down list. Adjust the character repeat settings and tap the OK button to save the changes.

When new key maps, or fonts, are added to the registry, they are available immediately and the font name is in the Keyboard Properties Key map dropdown list. Only one font at a time can be selected. The fonts affect the screen display, they do not affect any virtual (touchscreen) key taps.

See **About | Software | Language** tab for the name of any installed fonts.

Languages and Fonts

Fonts are available in the following languages (in separate part numbers) for each language: Simplified Chinese, Traditional Chinese, Korean, Japanese.
Tahoma font is on every unit and includes English (default), European (French, Spanish, German, Portuguese), Scandinavian languages, Arabic, Cyrillic, Greek, Hebrew, and Thai.

See Also: Regional Settings for instruction for setting User Interface Language and Default Input Language.

Mappable Keys

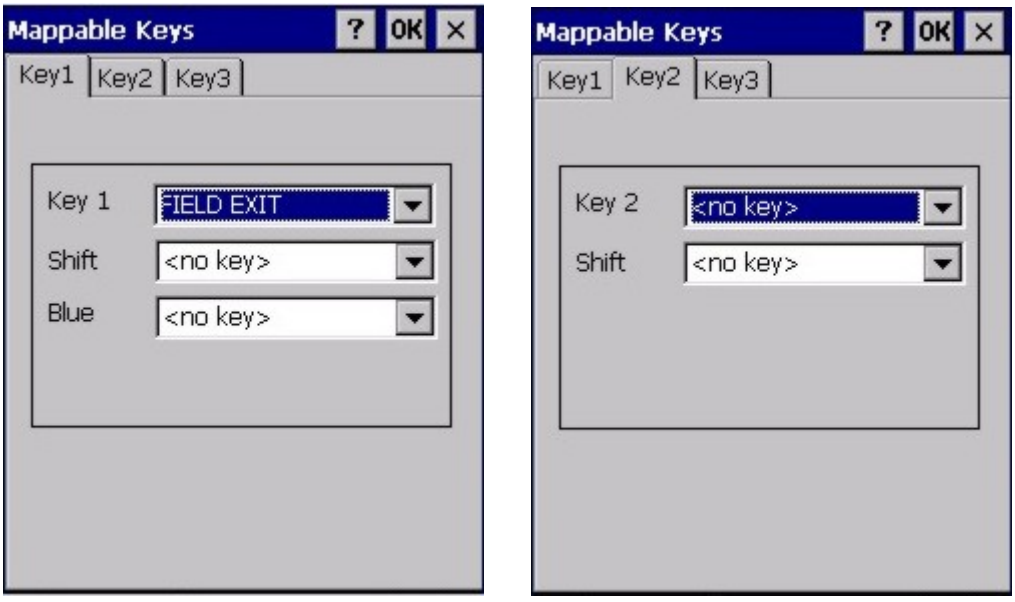
Start | Settings | Control Panel | Mappable Keys Icon

Use this option to assign key sequences to MX8 Diamond keys.

Factory Default Settings - 32 Key Keypad

Diamond 1	
No sticky key	Field Exit
Shift+diamond 1	No key
Blue+Diamond 1	No key
Diamond 2	
No sticky key	No key
Shift+Diamond 2	No key
Diamond 3	
No sticky key	No key
Shift+Diamond 3	No key

The mappable keys can be remapped to any key code defined by Windows CE with the exception of Left Shift, Left Alt, Left Ctrl, and Right Shift, Right Alt and Right Ctrl. These keys can also be remapped to a string of keys, launch an application, or run a command.



Assign key sequence settings by selecting keys from the drop down boxes.

Mixer

Start | Settings | Control Panel | Mixer

The MX8 has a speaker. It is active when a headset is not connected to the device.

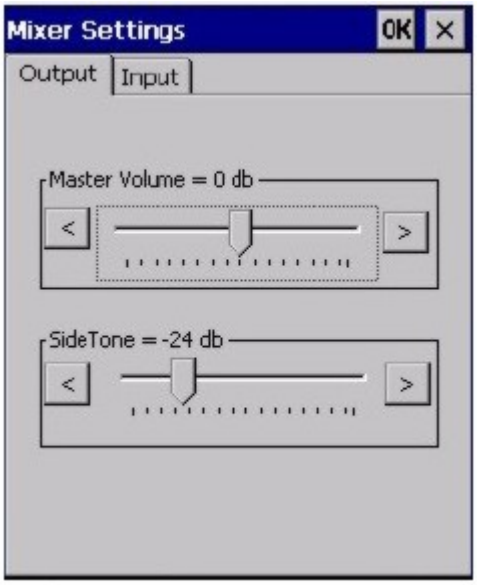
Use the settings on these panels to adjust the volume, record gain and sidetone for microphone input, speaker and speaker output.

Headsets can be enabled, disabled and selected using these panels.

Factory Default Settings

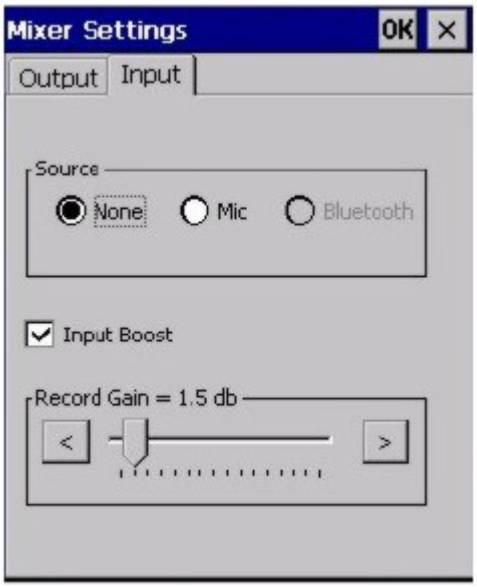
Output	
Master Volume	-6.0 dB
Sidetone	12.0 dB
Input	
Input Boost	Disabled
Record Gain	22.5 dB

Output panel



Tap and hold the Output sliders and move them either left or right, or tap the left and right arrows, to adjust Speaker volume decibel level.

Input Panel



Input Boost - When checked (enabled) increases the sensitivity of the microphone by 20 dB.

How To . . .

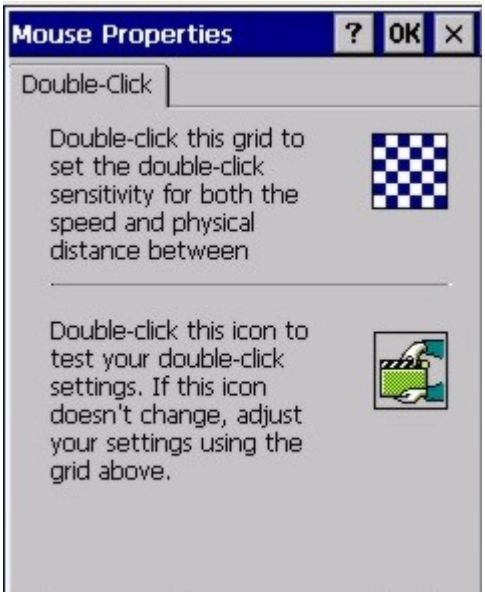
Enable Microphone -- Enable the **Mic** radio button and the **Input Boost** checkbox.

Disable Microphone -- Enable the **None** radio button.

Mouse

Start | Settings | Control Panel | Mouse

Use this option to set the double-tap sensitivity for stylus taps on the MX8 touchscreen.


Mouse Properties
?
OK
Double-Click
Double-click this grid to set the double-click sensitivity for both the speed and physical distance between
Double-click this icon to test your double-click settings. If this icon doesn't change, adjust your settings using the grid above.

MX8 Options

Start | Settings | Control Panel | MX8 Options

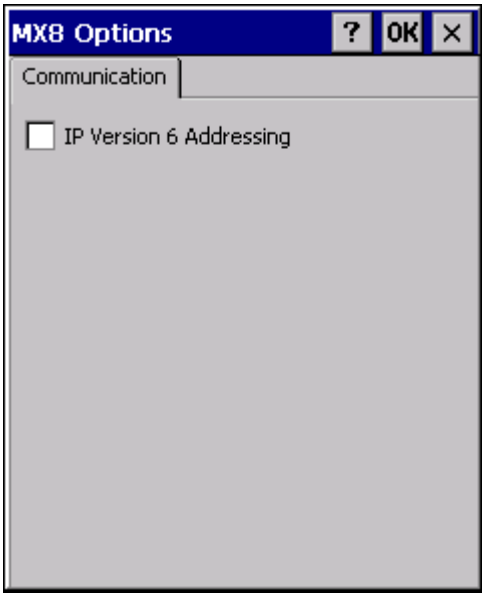
Set the IPv6 addressing.

It may be necessary to warmboot the MX8 after making desired changes. A pop up window indicates if a warmboot is required.

Note: Contact your LXE representative for upgrades if there is no icon corresponding to this item in the Control Panel.

Communication

Options on this tab configure communication options for the MX8.



MX8 Options / Communication Tab

If the unit is booted in a manner that resets the unit to factory defaults (MX8Update, ClearHive, or ResetAll), IPV6 will be disabled by the DisIPv6 utility that is executed by the Launch sequence. Nothing is required by the user - the normal boot process takes care of everything to disable IPv6 addressing.

IPv6 will not be disabled on a coldboot if the user uses the Options control panel to enable IPv6. In this case, IPv6 remains enabled until the user disables it or the registry is cleared by one of the three methods mentioned above.

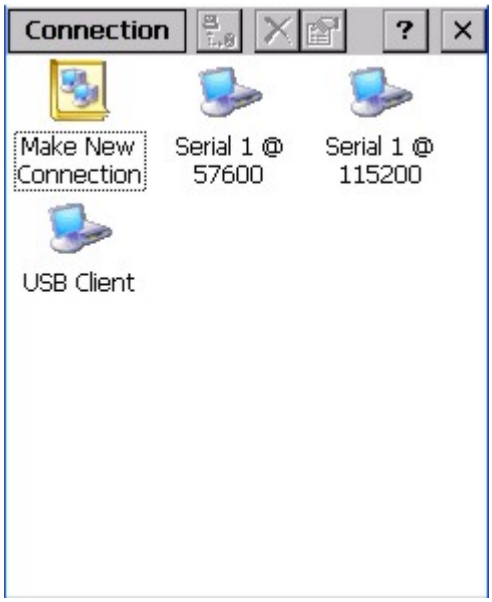
Enable or disable IPv6 and tap the OK box.

A dialog panel is displayed. Selecting Yes warmboots the unit – selecting No exits this control panel. Any change take effect after a warmboot.

Network and Dialup Options

Start | Settings | Control Panel | Network and Dialup Connections

Set MX8 network driver properties and network access properties. Select a connection to use, or create a new connection.



Create a New Connection

1. On the mobile device, select **Start | Settings | Control Panel | Network and Dialup Connections**. A window is displayed showing the existing connections.
2. Assuming the connection you want does not exist, double-tap **Make New Connection**.
3. Give the new connection an appropriate name (My Connection @ 9600, etc.). Tap the **Direct Connection** radio button. Tap the **Next** button.
4. From the popup menu, choose the port you want to connect to. Only the available ports are shown.
5. Tap the **Configure...** button.
6. Under the Port Settings tab, choose the appropriate baud rate. Data bits, parity, and stop bits remain at 8, none, and 1, respectively.
7. Under the **Call Options** tab, be sure to turn off Wait for dial tone, since a direct connection will not have a dial tone. Set the timeout parameter (default is 5 seconds). Tap **OK**.
8. **TCP/IP Settings** should not need to change from defaults. Tap the **Finish** button to create the new connection.
9. Close the **Remote Networking** window.
10. To activate the new connection select **Start | Settings | Control Panel | PC Connection** and tap the **Change Connection…** button.
11. Select the new connection. Tap **OK** twice.
12. Close the Control Panel window.

13. Connect the desktop PC to the mobile device with the appropriate cable.
14. Click the desktop **Connect icon** to test the new connection.

You can activate the connection by double-tapping on the specific connection icon in the Remote Networking window, but this will only start an RAS (Remote Access Services) session, and does not start ActiveSync properly.

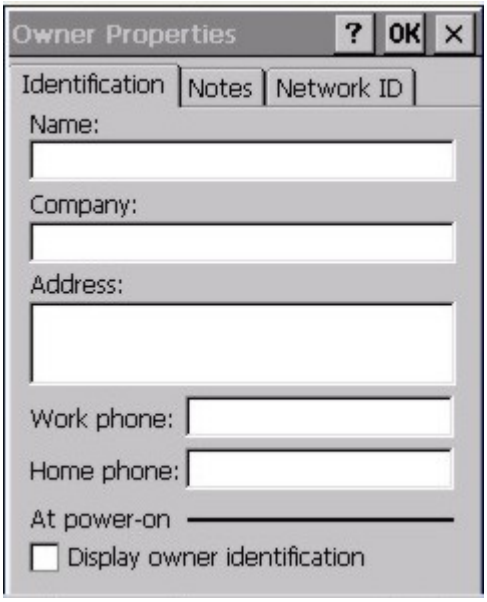
Owner

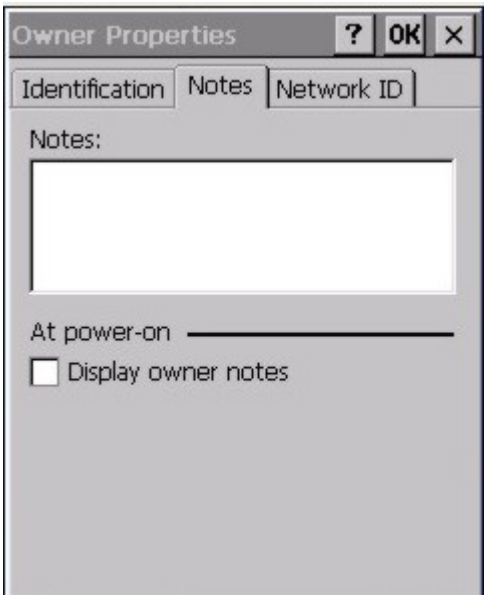
Start | Settings | Control Panel | Owner

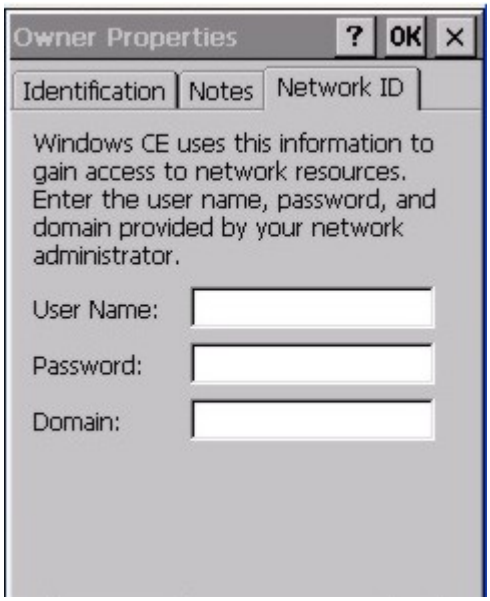
Set the MX8 owner details. The Network ID is used when logging into a remote network.

Factory Default Settings

Identification	
Name	Blank
Company	Blank
Address	Blank
Telephones	Blank
Display owner ID at power-on	Disabled
Notes	
Notes	Blank
Display notes at power-on	Disabled
Network ID	
User Name	Blank
Password	Blank
Domain	Blank







Enter user name, password and domain to be used when logging into network resources.

Password

Start | Settings | Control Panel | Password

Use this panel to set MX8 user access to control panels and power up password properties. **Important:** This password must be entered before performing a cold boot or cold reset. If entering a power-on or screen saver password does not allow you to disable this password protection or perform a cold boot, contact Customer Support.

Factory Default Settings

Password	Blank
Enter password at Power On	Disabled
Enter password at Remote Desktop Screen Saver	Disabled

- The password and password settings are saved during a warm boot and a cold boot.
- The screensaver password affects the Remote Desktop screensaver only.
- After a password is assigned and saved, each time a Settings | Control Panel option is selected, the user will be required to enter the password before the Control Panel will open.
- The screensaver password is the same as the power-on password. They are not set independently.
- A screensaver password cannot be created without first enabling the “Enable password protection at power-on” check-box.
- The screensaver password is not automatically enabled when the “power-on” checkbox is enabled.

Enter the password in the Password text box, then press Tab and type the password again to confirm it.

Enable the power-on checkbox and, if desired, the screensaver checkbox.

A changed/saved password is in effect immediately.

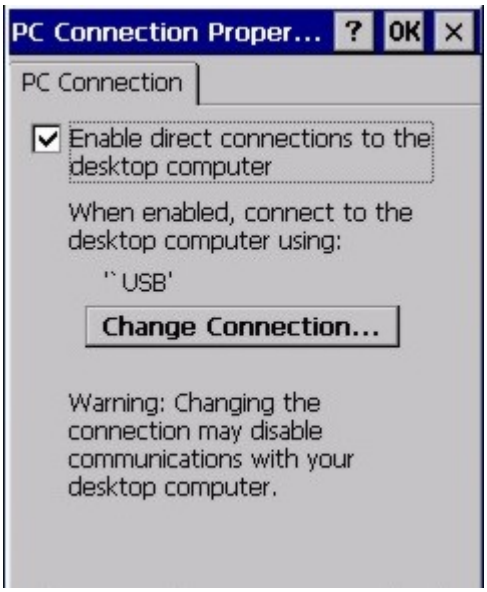
PC Connection

Start | Settings | Control Panel | PC Connection

Use these options to control a cabled connection (USB, serial) between the MX8 and a nearby desktop/laptop computer.

Factory Default Settings

Enable direct connection	Enabled
Connect using	USB Client


PC Connection Proper...
?
OK
PC Connection
Enable direct connections to the desktop computer
When enabled, connect to the desktop computer using:
'USB'
Change Connection...
Warning: Changing the connection may disable communications with your desktop computer.

Unchecking the **Enable direct connections** checkbox disables ActiveSync on the MX8.

Tap the **Change Connection** button to change the direct connect setting.

Tap the drop-down box to view a list of pre-configured connection settings.

Power

Start | Settings | Control Panel | Power

The MX8 power mode timers are cumulative.

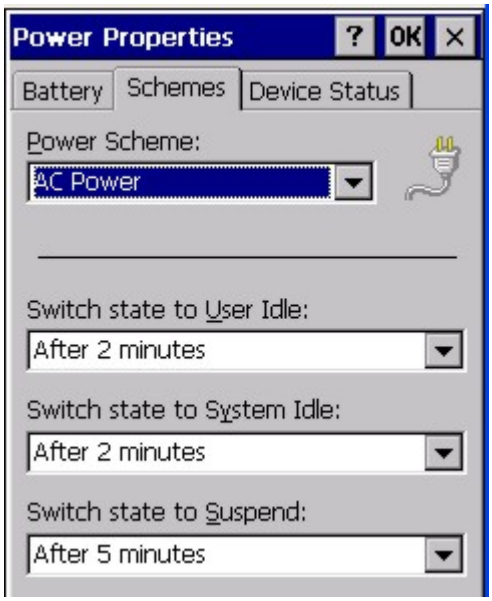
The System Idle timer begins the countdown after the User Idle timer has expired and the Suspend timer begins the countdown after the System Idle timer has expired.

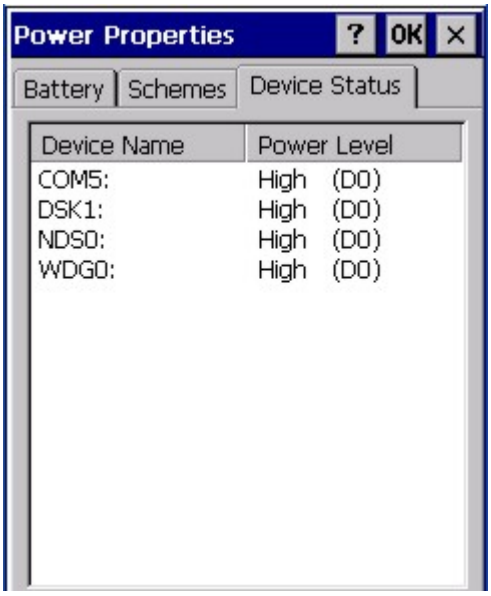
When the User Idle timer is set to “Never”, the power scheme timers never place the device in User Idle, System Idle or Suspend modes (even when the device is idle).

The Display | Backlight setting is synchronized with the User Idle setting in the Schemes tab in the Power control panel.

Factory Default Settings

Battery Tab	
Turbo Mode	Enabled
Schemes Tab	
Battery Power - User Idle Timeout	3 seconds
Battery Power - System Idle Timeout	15 seconds
Battery Power - Suspend Timeout	5 minutes
AC Power - User Idle Timeout	2 minutes
AC Power - System Idle Timeout	2 minutes
AC Power - Suspend Timeout	5 minutes
Device Status Tab	No user interaction





Because of the cumulative effect, and using the Battery Power Scheme Defaults listed above:

- The backlight turns off after 3 seconds of no activity,
- The display turns off after 18 seconds of no activity (15 sec + 3 sec),
- And the device enters Suspend after 5 minutes and 18 seconds of no activity.
- If the User Idle timer is set to Never, the power scheme timers never place the device in User Idle, System Idle or Suspend modes.

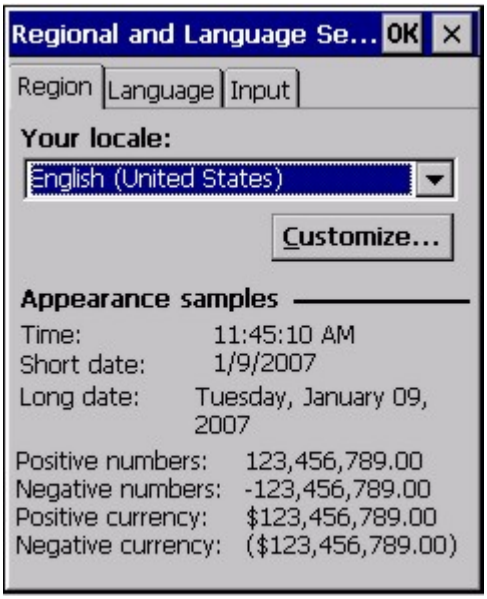
Regional and Language Settings

Start | Settings | Control Panel | Regional Settings

Set the appearance of numbers, currency, time and date based on regional and language settings. Set the MX8 user interface language and the default input language.

Factory Default Settings

Region	
Locale	English (United States)
Number	123,456,789.00 / -123,456,789.00 neg
Currency	$123,456,789.00 pos / ($123,456,789.00) neg
Time	h:mm:ss tt (tt=AM or PM)
Date	M/d/yy short / dddd,MMMM,dd,yyyy long
Language	
User Interface	English (United States)
Input	
Language	English (United States)-US
Installed	English (United States)-US

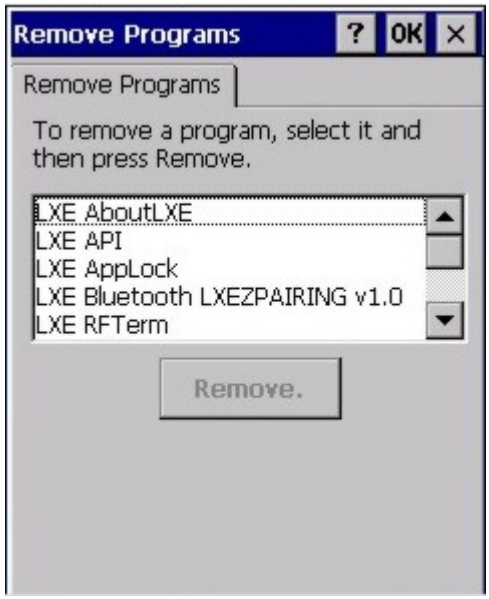


Remove Programs

Start | Settings | Control Panel | Remove Programs

Note: Lists programs installed in RAM that have been marked for removal.

Select a program and tap Remove. Follow the prompts on the screen to uninstall MX8 user-installed only programs. The change takes effect immediately. Files stored in the **My Documents** folder are not removed using this option.



Note: Do not remove LXE-installed programs using this option. Contact your LXE representative for assistance if LXE installed programs must be deleted.

Scanner Wedge Introduction

Start | Settings | Control Panel | Scanner

Set MX8 scanner keyboard wedge parameters, enable or disable allowed symbologies, scanner icon appearance, active scanner port, and scan key settings.

Assign baud rate, parity, stop bits and data bits for available COM ports.

Parameters on the Main tab and the COM tab(s) apply to this device only.

Barcode manipulation parameter settings on the Barcode tab are applied to the incoming data resulting from successful barcode scans sent to the MX8 for processing. The successful barcode scan data may be sent by

- an integrated scanner in the endcap,
- a wireless Bluetooth Handheld Scanner,
- or a tethered scanner.

Integrated scanner configuration can be changed using the Scanner Control Panel or via the LXE API functions. While the changed configuration is being stored, the Scanner LED is solid amber. The scanner is not operational during the configuration update.

Note: The integrated scan engine activates when a Scan button on the front of the MX8 is pressed or when the trigger on an installed trigger handle is pressed.

Barcode Processing Overview

Barcode processing involves several steps. Some steps may be skipped during the processing depending on user selections on the Scanner control panels. The steps are presented below in the order they are performed on the barcode data.

1. Scanned barcode is tested for a **code ID** and matching length (Min/Max). If it matches, it is processed per the rules in place for that symbology. If the scan does not meet the criteria for that symbology, it is processed based on the settings for All. If a code ID is not found, the barcode data is processed based on the settings for All.
2. If symbology is **disabled**, the scan is rejected.
3. Strip **leading** data bytes unconditionally.
4. Strip **trailing** data bytes unconditionally.
5. Parse for, and strip if found, **Barcode Data** strings.
6. Replace any **control characters** with string, as configured.
7. Add **prefix** string to output buffer.
8. If **Code ID** is ***not*** stripped, add saved **code ID** from above to output buffer.
9. Add processed **barcode string** from above to output buffer.
10. Add **suffix string** to output buffer.
11. Add a terminating **NUL** to the output buffer, in case the data is processed as a string.
12. If key output is enabled, start the process to output keys. If control characters are encountered:
    - If Translate All is set, key is translated to CTRL + char, and output.
    - If Translate All is not set, and key has a valid VK code, key is output.
    - Otherwise, key is ignored (not output).

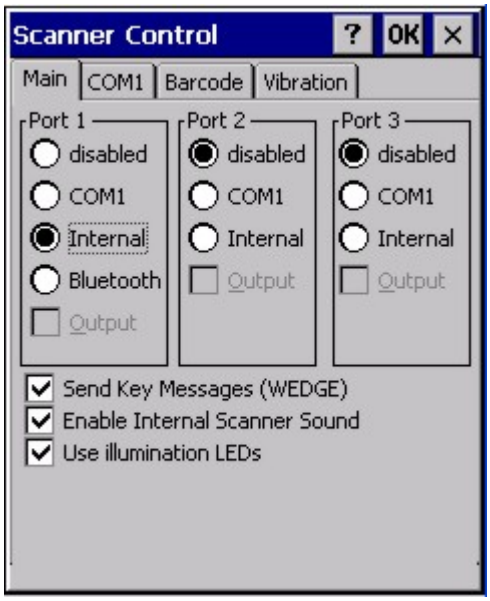
The barcode data is ready to be read by applications.

Factory Default Settings

Main Tab	
Port 1	Internal
Port 2	Disabled
Port 3	Disabled
Send Key Message (WEDGE)	Enabled
Enable Scanner Sound	Enabled
Use Illumination LEDs	Enabled
COM1 Tab (External serial port)	
Baud Rate	9600
Stop Bits	1
Parity	None
Data Bits	8
Barcode Tab	
Enable Code ID	None
Continuous Scan Mode	Disabled
Timeout between same symbol	1 second
Vibration	
Good Scan Vibration	Off
Bad Scan Vibration	Long

Main Tab

Start | Settings | Control Panel | Scanner | Main tab



Click here to view factory default settings for this panel.

Port

Port 1 – Internal. Radio button allows scanner input/output on Port 1 (scan key or trigger).

Port 2 – Output is enabled when COM1 is enabled on this port.

Port 3 - Output is enabled when COM1 is enabled on this port.

Send Key Messages (WEDGE)

Default: Enabled. If “Send Key Messages (WEDGE)” is checked, the Scanner Driver is in “Key Message” (also known as “character”) mode which sends the barcodes to the application with the focus as keystrokes. All data scanned is converted to keystrokes and sent to the active window.

If “Send Key Messages (WEDGE)” is not checked, the Scanner Driver is in “Block” mode which buffers the data that can be read by an application from the WDG: device through the OS or LXE APIs. Note that this latter method is significantly faster than using “Wedge”.

Even if Send Key Messages is enabled (“key mode”), the data is still available using the scanner APIs (“block mode”). If two or more applications are reading the data in Block mode, ClearBuf must be set to Off so data is not erased when read. Please refer to the “CE API Programming Guide” for details on scanner APIs.

Enable Internal Scanner Sound

Default: Enabled.

Functionality of the internal scanner driver engine includes audible tones on good scan (at the maximum db supported by the speaker) and failed scan. If enabled, Good Scan / Bad Scan Vibration provides a tactile response on a scan event.

Disable this parameter when good scan/bad scan sounds are to be handled by alternate means e.g. application-controlled sound files.

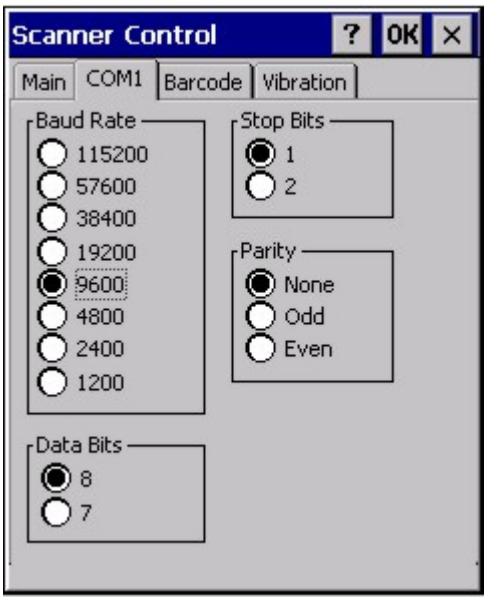
Rejected barcodes generate a bad scan beep. In some cases, the receipt of data from the scanner triggers a good scan beep from an external scanner, and then the rejection of scanned barcode data by the processing causes a bad scan beep from the MX8 on the same data.

Use Illumination LEDs

The default setting is Enabled. Integrated imager may use illumination LEDs when scanning a barcode.

COM1 Tab

Start | Settings | Control Panel | Scanner | COM1



This panel sets communication parameters for any device connected to the external port. Settings cannot be changed by the end-user.

Adjust the settings and click the OK button to save the changes. Any changes take effect immediately.

This panel does not configure the connected device. Please refer to the documentation for the external connected or wireless device for information on configuring the device.

Note: COM default values are restored after a cold boot or operating system upgrade.COM1 does not support 5V switchable power on Pin 9 for tethered scanners.

Integrated laser scanner default values are 9600 Baud, 8 data bits, 1 stop bit and No parity. EV-15 scanner default values are 19200 Baud, 8 data bits, 1 stop bit and No parity. If these values are changed, the default values are restored after a cold boot or reflashing.

Barcode Tab

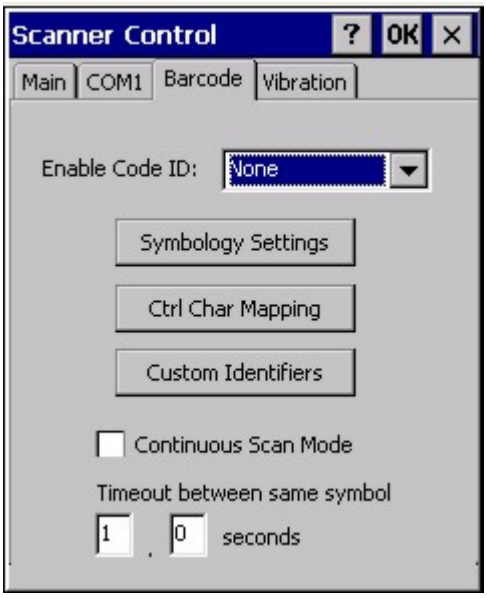
Start | Settings | Control Panel | Scanner | Barcode tab

The Barcode tab contains several options to control barcode processing. Options include:

- Defining custom Code IDs
- Disable processing of specified barcode symbologies
- Rejecting barcode data that is too short or too long
- Stripping characters including Code ID, leading or trailing characters and specified barcode data strings
- Replacing control characters
- Adding a prefix and a suffix.

Notes:

- The Scanner application (Wedge) can only enable or disable barcode processing inside the Wedge software.
- The Scanner application enables or disables the Code ID that may be scanned.
- Enabling or disabling a specific barcode symbology is done manually using the configuration barcode in the *Integrated Scanner Programming Guide* (available on the LXE Manuals CD and the LXE ServicePass website).



Choose an option in the Enable Code ID drop-down box: None, AIM ID, Symbol ID, or Custom ID.

Buttons

Symbology Settings	Individually enable or disable a barcode from being scanned, set the minimum and maximum size barcode to accept, strip Code ID, strip data from the beginning or end of a barcode, or (based on configurable Barcode Data) add a prefix or suffix to a barcode before transmission.
Ctrl Char Mapping	Define the operations the LXE Wedge performs on control characters (values less than 0x20) embedded in barcodes.
Custom Identifiers	Defines an identifier that is at the beginning of barcode data which acts as a Code ID. After a Custom Identifier is defined, Symbology Settings can be defined for the identifier just like standard Code IDs.

See "Barcode Processing Overview" on page 118

Continuous Scan Mode

Start | Settings | Control Panel | Scanner | Barcode Tab

Enabling Continuous Scan Mode will ensure the laser is always on and decoding.

Caution: Laser beam is emitted continuously. Do not stare into the laser beam.

Timeout Between Same Symbol

Set the *Timeout between same symbol* to a value sufficient to prevent the beeper from continuously beeping when a symbol is left in the scanner's field of view.

When the scanner is in continuous mode the trigger and scan buttons function as a scanner On/Off switch.

The scanner red LED will always be off in continuous mode.

The audio beeps and green LED work the same as they do for normal trigger mode.

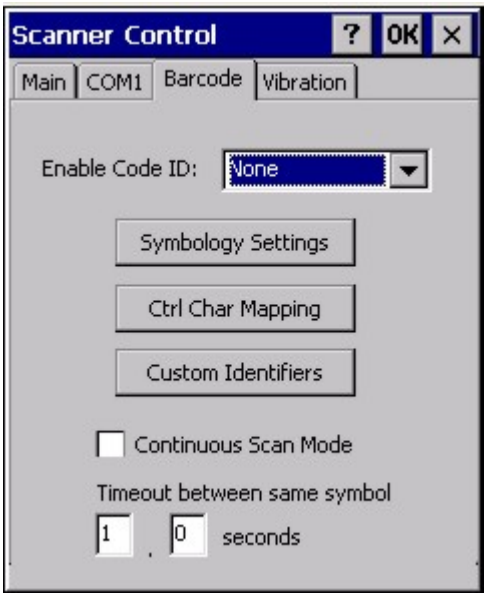
If trigger mode, power mode, or timeout between same symbol parameters are changed using external configuration barcodes in the *Integrated Scanner Programming Guide*, the operating system automatically restores the parameters to their programmed settings upon a warm or cold boot and/or any change made in the control panel.

Toggling between continuous and normal trigger modes is in effect immediately upon pressing the OK button in this control panel, a warm boot is not required or necessary.

Enable Code ID

This parameter programs the scanner to transmit the specified Code ID and/or determines the type of barcode identifier being processed.

Transmission of the Code ID is enabled at the scanner for all barcode symbologies, not for an individual symbology. Code ID is sent from the scanner so the scanner driver can discriminate between symbologies.



Options

- **None:** Programs an internal scanner to disable transmission of a code ID. After clicking the Symbology Settings button, the only entry on the Symbology listing is All, plus any configured custom IDs. Select this option to disable Code ID processing. The barcode data is received, but is not checked for a Code ID.
- **AIM:** Programs an internal scanner to transmit the AIM ID with each barcode. After clicking the Symbology Settings button, the Symbology listing includes all AIM ID symbologies plus any configured custom Code IDs. Select this option to enable processing of barcodes with an AIM or custom Code ID.
- **Symbol:** Programs an internal scanner to transmit the Symbol ID with each barcode. After clicking the Symbology Settings button, the Symbology listing includes all Symbol ID symbologies plus any configured custom Code IDs. Select this option to enable processing of barcodes with a Symbol or custom Code ID. Note that the Symbol entry may not appear for any device equipped with an integrated imager (e.g. EV-15 imager).
- **Custom:** Does not change the internal scanner's Code ID transmission setting. After clicking the Symbology Settings button, the Symbology listing includes all Custom Code IDs. Select this option to enable processing of barcodes with a custom Code ID.

Notes

- When Strip: Code ID (see Symbology panel) is not enabled, the code ID is sent as part of the barcode data to an application.
- When Strip: Code ID (see Symbology panel) is enabled, the entire Code ID string is stripped (i.e. treated as a Code ID).
- **UPC/EAN Codes only**: The code id for supplemental barcodes is not stripped.

- When Enable Code ID is set to **AIM or Symbol,**Custom Code IDs appear at the end of the list of standard Code IDs.
- When Enable Code ID is set to **Custom**, Custom Code IDs replace the list of standard Code IDs.
- When Enable Code ID is set to **Custom**, **AIM** or **Symbol** Code IDs must be added to the end of the Custom Code ID. For example, if a Custom Code ID 'AAA' is created to be read in combination with an AIM ID for Code 39 ']A1', the Custom Code ID must be entered with the AIM ID code first then the Custom Code ID :]A1AAA.
- When Enable Code ID is set to **None**, Code IDs are ignored.
- Custom symbologies appear at the end of the list in the Symbology dialog, but will be processed at the beginning of the list in the scanner driver. This allows custom IDs, based on actual code IDs, to be processed before the Code ID.
- When using the parameters in the Scanner Control Panel to manage indicators for good read/bad read decoding, the number or patterns of beeps heard may be confusing. Rejected barcodes generate a bad scan beep. In some cases, the receipt of data from an external scanner triggers a good scan beep, and then the rejection of scanned barcode data by the Scanner Control Panel processing causes a bad scan beep by the mobile device on the same data.

Barcode – Custom Identifiers

Code IDs can be defined by the user. This allows processing parameters to be configured for barcodes that do not use the standard AIM or Symbol IDs or for barcodes that have data embedded at the beginning of the data that acts like a Code ID.

These are called **custom Code ID**s and are included in the Symbology drop down box in the Symbology dialog, unless **Enable Code ID** is set to **None**. When the custom Code ID is found in a barcode, the configuration specified for the custom Code ID is applied to the barcode data.

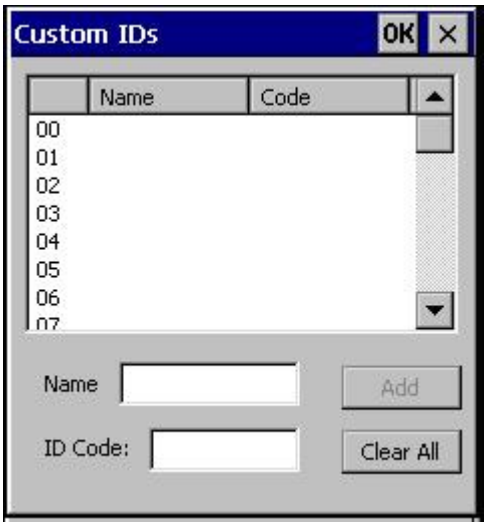
It is intended that custom code IDs are used to supplement the list of standard code IDs (if **Enable Code ID** is set to **AIM** or **Symbol**), or to replace the list of standard code IDs (if **Enable Code ID** is set to **Custom).**

When **Enable Code ID** is set to **None**, custom code IDs are ignored.

Note: Custom symbologies will appear at the end of the list in the Symbology dialog, and are processed at the beginning of the list in the scanner driver itself. This allows custom IDs based on actual code IDs to be processed before the code ID itself.

*Note: When **Strip: Code ID** is enabled, the entire custom Code ID string is stripped (i.e., treated as a Code ID).*

The dialog box shown below allows the custom Code IDs to be configured. When incoming data is checked for a custom ID code, the list is compared in the order displayed in this dialog box.



After adding, changing and removing items from the Custom IDs list, click the OK button to save changes and return to the Barcode panel.

Parameters

Name text box

Name is the descriptor that is used to identify the custom Code ID. Names must be unique from each other; however, the Name and ID Code may have the same value. Name is used in the Symbology drop down box to identify the custom Code ID in a user-friendly manner. Both Name and ID Code must be specified in order to add a custom Code ID to the Custom IDs list.

ID Code text box

ID Code defines the data at the beginning of a barcode that acts as an identifier (the actual Code ID). Both Name and ID Code must be specified in order to add a custom Code ID to the Custom IDs list.

Buttons

Add

Entering data into both the Name and ID Code fields enables the Add button. Click the Add button and the data is added to the next empty location in the Custom ID list.

Insert

Click on an empty line in the Custom ID list. The Add button changes to Insert. Enter data into both the Name and ID Code fields and click the Insert button. The data is added to the selected line in the Custom IDs list.

Edit

Double click on the item to edit. Its values are copied to the text boxes for editing. The Add button changes to Replace. When Replace is clicked, the values for the current item in the list are updated.

Clear All

When no item in the Custom IDs list is selected, clicking the Clear All button clears the Custom ID list and any text written (and not yet added or inserted) in the Name and ID Code text boxes.

Remove

The Clear All button text changes to a Remove button when an item in the Custom IDs list is selected. Click the desired line item and then click the Remove button to delete it. Line items are Removed one at a time. Contents of the text box fields are cleared at the same time.

Control Code Replacement Examples

Configuration Data	Translation	Example Control Character	Example Configuration	Translated Data
Ignore (drop)	The control character is discarded from the barcode data, prefix and suffix	ESCape	Ignore (drop)	0x1B in the barcode is discarded.
Printable text	Text is substituted for Control Character.	Start of TeXt	STX	0x02 in a barcode is converted to the text STX.
Hat-encoded text	The hat-encoded text is translated to the equivalent hex value.	Carriage Return	^M	Value 0x0d in a barcode is converted to the value 0x0d.
Escaped hat-encoded text	The hat-encoding to pass through to the application.	Horizontal Tab	\^I	Value 0x09 in a barcode is converted to the text ^I.
Hex-encoded text	The hex-encoded text is translated to the equivalent hex value.	Carriage Return	0x0A	Value 0x0D in a barcode is converted to a value 0x0A.
Escaped hex-encoded text	The hex-encoding to pass through to the application.	Vertical Tab	\0x0A or 0\x0A	Value 0x0C is a barcode is converted to text 0x0A

See "Hat Encoding" on page 248

Barcode Processing Examples

The following table shows examples of stripping and prefix/suffix configurations. The examples assume that the scanner is configured to transmit an AIM identifier.

	Symbology				
	All	**EAN-128(]C1)**	**EAN-13(]E0)**	**Intrlv 2 of 5(]I0)**	**Code93**
Enable	Enabled	Enabled	Enabled	Enabled	Disabled
Min length	1	4	1	1	
Max length	all	all	all	10	
Strip Code ID	Enabled	Enabled	Disabled	Enabled	
Strip Leading	3	0	3	3	
Strip Barcode Data		*123	1*	456	
Strip Trailing	0	0	3	3	
Prefix	aaa	bbb	ccc	ddd	
Suffix	www	xxx	yyy	zzz	

Provided that the wedge is configured with the above table, below are examples of scanned barcode data and results of these manipulations.

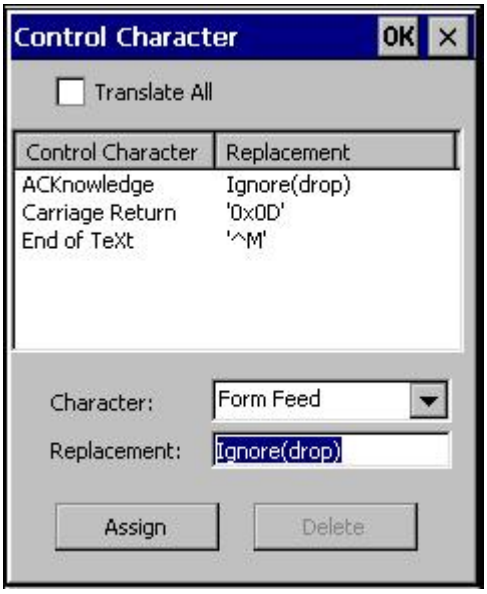
Barcode Symbology	Raw Scanner Data	Resulting Data
EAN-128	]C11234567890123	bbb1234567890xxx
EAN-128	]C111234567890123	bbb11234567890xxx
EAN-128	]C1123	*< rejected > (too short)*
EAN-13	]E01234567890987	ccc]E04567890yyy
EAN-13	]E01231234567890987	ccc]E0234567890yyy
EAN-13	]E01234	ccc]E0yyy
I2/5	]I04444567890987654321	***< rejected >*** *(too long)*
I2/5	]I04444567890123	ddd7890zzz
I2/5	]I0444	dddzzz
I2/5	]I022245622	ddd45zzz
Code-93	]G0123456	***< rejected >*** *(disabled)*
Code-93	]G0444444	***< rejected >*** *(disabled)*
Code-39	]A01234567890	aaa4567890www
Code-39 full ASCII	]A41231234567890	aaa1234567890www
Code-39	]A4	***< rejected >*** *(too short)*

Note: Rejected barcodes generate a bad scan beep. In some cases, the receipt of data from the scanner triggers a good scan beep (from the external scanner), and then the rejection of scanned barcode data by the processing causes a bad scan beep on the same data.

Barcode - Ctrl Char Mapping

The Ctrl Char Mapping button (Control Character Mapping) activates a dialog to define the operations the LXE Wedge performs on control characters (values less than 0x20) embedded in barcodes. Control characters can be replaced with user-defined text which can include hat encoded or hex encoded values.

In key message mode, control characters can also be translated to their control code equivalent key sequences.



Translate All

When **Translate All is checked**, unprintable ASCII characters (characters below 20H) in scanned barcodes are assigned to their appropriate CTRL code sequence when the barcodes are sent in Character mode.

The wedge provides a one-to-one mapping of control characters to their equivalent control+character sequence of keystrokes. If control characters are translated, the translation is performed on the barcode data, prefix, and suffix before the keystrokes are simulated.

Parameters

Translate All

This option is grayed unless the user has Send Key Messages (WEDGE) on the Main tab selected.

In Key Message mode, when this option is enabled, control characters embedded in a scanned barcode are translated to their equivalent control key keystroke sequence (13 [0x0d] is translated to Control+M keystrokes as if the user pressed the CTRL, SHIFT, and m keys on the keypad).

Additionally, when Translate All is disabled, any control code which has a keystroke equivalent (enter, tab, escape, backspace, etc.) is output as a keystroke.

Any control code without a keystroke equivalent is dropped.

Character

This is a drop down combo box that contains the control character name. Refer to the Character drop down box for the list of control characters and their names.

When a character name is selected from the drop down box, the default text *Ignore (drop)* is shown and highlighted in the Replacement edit control. *Ignore (drop)* is highlighted so the user can type a replacement if the control character is not to be ignored.

Once the user types any character into the Replacement edit control, reselecting the character from the Character drop down box redisplays the default *Ignore (drop)* in the Replacement edit control.

Replacement

The edit control where the user types the characters to be assigned as the replacement of the control character.

Replacements for a control character are assigned by selecting the appropriate character from the Character drop down box, typing the replacement in the Replacement edit control (according to the formats defined above) and then clicking the button. The assigned replacement is then added to the list box above the Assign button.

For example, if Carriage Return is replaced by Line Feed (by specifying ^J or 0x0A) in the configuration, the value 0x0d received in any scanned barcode (or defined in the prefix or suffix) will be replaced with the value 0x0a.

The Wedge then sends Ctrl+J to the receiving application, rather than Ctrl+M.

List Box

The list box shows all user-defined control characters and their assigned replacements.

All replacements are enclosed in single quotes to delimit white space that has been assigned.

Assign Button

Click this button when you want to assign the characters in the Replacement text box to the character in the Character drop down box.

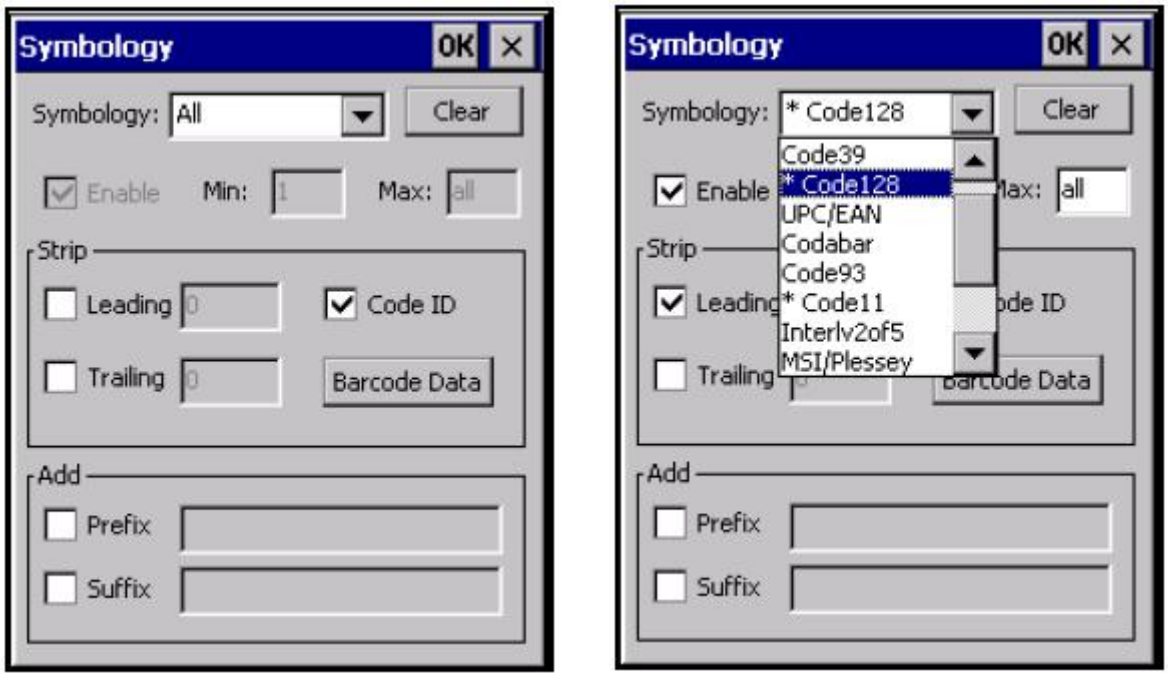
Delete Button

This button is grayed unless an entry in the list box is highlighted.

When an entry (or entries) is highlighted, and the Delete button is clicked, the highlighted material is deleted from the list box.

Barcode - Symbology Settings

The Symbology selected in the Symbologies dialog defines the symbology for which the data is being configured. The features available on the Symbology Settings dialog include the ability to individually enable or disable a barcode from scanning, set the minimum and maximum size barcode to accept, strip Code ID, strip data from the beginning or end of a barcode, or (based on configurable Barcode Data) add a prefix or suffix to a barcode.



The Symbology drop-down box contains all symbologies **supported on the MX8**. An asterisk appears in front of symbologies that have already been configured or have been modified from the default value.

Each time a Symbology is changed, the settings are saved as soon as the OK button is clicked. Settings are also saved when a new Symbology is selected from the Symbology drop-down list.

Clear Button -- Clicking this button will erase any programmed overrides, returning to the default settings for the selected symbology. If **Clear** is pressed when **All** is selected as the symbology, a confirmation dialog appears, then all symbologies are reset to their factory defaults, and all star (*) indications are removed from the list of Symbologies.

The order in which these settings are processed are:

- Min / Max
- Code ID
- Leading / Trailing
- Barcode Data
- Prefix / Suffix

*Note: When **Enable Code ID** is set to **None** on the Barcode tab and when **All** is selected in the Symbology field, **Enable** and **Strip Code ID** on the Symbology panel are grayed and the user is not allowed to change them, to prevent deactivating the scanner completely.*

When **All** is selected in the Symbology field and the settings are changed, the settings in this dialog become the defaults, used unless overwritten by the settings for individual symbologies. This is also true for Custom IDs, where the code IDs to be stripped are specified by the user.

*Note: In Custom mode on the Barcode tab, any Code IDs **not** specified by the user will not be stripped, because they will not be recognized as Code IDs.*

If a specific symbology's settings have been configured, a star (*) will appear next to it in the Symbology drop-down box, so the user can tell which symbologies have been modified from their defaults.

If a particular symbology has been configured, the entire set of parameters from that symbologies screen are in effect for that symbology. In other words, either the settings for the configured symbology will be used, or the default settings are used, not a combination of the two.

If a symbology has not been configured (does not have an * next to it) the settings for **All** are used which is not necessarily the default.

Parameters

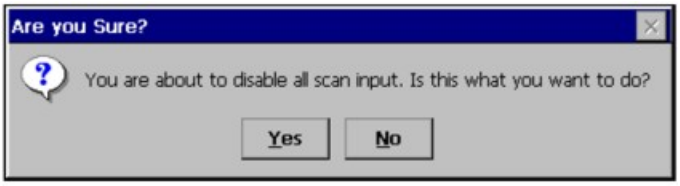
Enable

This checkbox enables (checked) or disables (unchecked) the symbology field.

The scanner driver searches the beginning of the barcode data for the type of ID specified in the Barcode tab -- Enable Code ID field (AIM or Symbol) plus any custom identifiers.

When a code ID match is found as the scanner driver processes incoming barcode data, if the symbology is disabled, the barcode is rejected. Otherwise, the other settings in the dialog are applied and the barcode is processed. If the symbology is disabled, all other fields on this dialog are grayed.

When there are ***no** customized symbology settings*, and the Enable checkbox is unchecked, while All is selected, a warning message is displayed.



Click the Yes button or the No button. Click the X button to close the dialog without making a decision.

If there ***are** customized settings*, uncheck the Enable checkbox for the All symbology. This results in disabling all symbologies *except* the customized ones.

Min

This field specifies the minimum length that the barcode data (not including Code ID) must meet to be processed.

Any barcode scanned that is less than the number of characters specified in the Min field is rejected. The default for this field is 1.

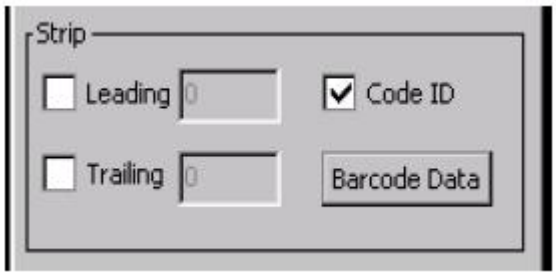
Max

This field specifies the maximum length that the barcode data (not including Code ID) can be processed. Any barcode scanned that has more characters than specified in the Max field is rejected. The default for this field is All (9999).

If the value entered is greater than the maximum value allowed for that symbology, the maximum valid length is used instead.

Strip Leading/Trailing Control

This group of controls determines what data is removed from the barcode before the data is buffered for the application. When all values are set, Code ID takes precedence over Leading and Trailing; Barcode Data stripping is performed last. Stripping occurs before the Prefix and Suffix are added, so does not affect them.



If the total number of characters being stripped is greater than the number of characters in the barcode data, it becomes a zero byte data string. If, in addition, Strip Code ID is enabled, and no prefix or suffix is configured, the processing will return a zero-byte data packet, which will be rejected.

The operation of each type of stripping is defined below:

Leading

This strips the number of characters specified from the beginning of the barcode data (not including Code ID). The data is stripped unconditionally. This action is disabled by default.

Trailing

This strips the number of characters specified from the end of the barcode data (not including Code ID). The data is stripped unconditionally. This action is disabled by default.

Code ID

Strips the Code ID based on the type code id specified in the Enable Code ID field in the Barcode tab. By default, Code ID stripping is enabled for all symbologies (meaning code IDs will be stripped, unless specifically configured otherwise).

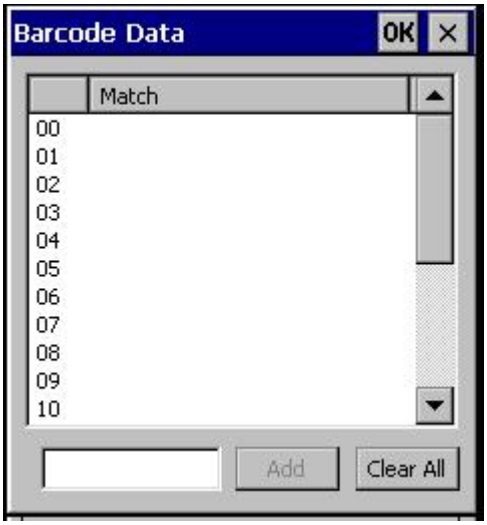
Barcode Data Match List

Barcode Data Panel

This panel is used to strip data that matches the entry in the Match list from the barcode. Enter the data to be stripped in the text box and tap the Insert or Add button. The entry is added to the Match list.

To remove an entry from the Match list, highlight the entry in the list and tap the Remove button.

Tap the OK button to store any additions, deletions or changes.



Barcode Data Match Edit Buttons

Add	Entering data into the text entry box enables the Add button. Tap the **Add** button and the data is added to the next empty location in the Custom ID list.
Insert	Tap on an empty line in the Custom ID list. The **Add** button changes to **Insert**. Enter data into both the Name and ID Code fields and tap the Insert button. The data is added to the selected line in the Custom IDs list.
Edit	Double tap on the item to edit. Its values are copied to the text boxes for editing. The **Add** button changes to **Replace**. When Replace is tapped, the values for the current item in the list are updated.
Clear All	When no item in the Custom IDs list is selected, tapping the Clear All button clears the Custom ID list and any text written (and not yet added or inserted) in the Name and ID Code text boxes.
Remove	The **Clear All** button changes to a **Remove** button when an item in the Custom IDs list is selected. Tap the desired line item and then tap the Remove button to delete it. Line items are Removed one at a time. Contents of the text box fields are cleared at the same time.

Notes

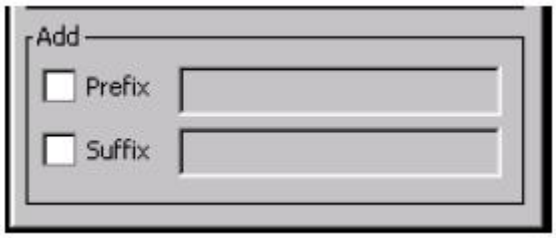
- **Prefix** and **Suffix** data is always added on after stripping is complete, and is not affected by any stripping settings.
- If the stripping configuration results in a 0 length barcode, a good beep will still be sounded, since barcode data was read from the scanner.

Match List Rules

The data in the match list is processed by the rules listed below:

- Strings in the list will be searched in the order they appear in the list. If the list contains ***ABC*** and ***AB***, in that order, incoming data with ***ABC*** will match first, and the ***AB*** will have no effect.
- When a match between the first characters of the barcode and a string from the list is found, that string is stripped from the barcode data.
- Processing the list terminates when a match is found or when the end of the list is reached.
- If the wildcard ***** is not specified, the string is assumed to strip from the beginning of the barcode data. The string ***ABC**** strips off the prefix ***ABC***. The string ****XYZ*** will strip off the suffix ***XYZ***. The string ***ABC*XYZ*** will strip both prefix and suffix together. More than one * in a configuration string is not allowed. (The User Interface will not prevent it, but results would not be as expected, as only the first * is used in parsing to match the string.)
- The question mark wildcard ***?*** may be used to match any single character in the incoming data. For example, the data AB?D will match ABCD, ABcD, or AB0D, but not ABDE.
- The Barcode Data is saved per symbology configured. The Symbology selected in the Symbologies dialog defines the symbology for which the data is being configured.
- Note that the Code ID (if any are configured) is ignored by this dialog, regardless of the setting of **Strip: Code ID** in the Symbologies dialog. According to the sequence of events (specified above), the Code ID must not be included in the barcode data being matched, because when the matching test occurs, the Code ID has already been stripped. If Strip Code ID is disabled, then the barcode data to match must include the Code ID. If Strip Code ID is enabled, the data should not include the Code ID since it has already been stripped.

Add Prefix/Suffix Control



Use this option to specify a string of text, hex values or hat encoded values to be added to the beginning (prefix) or the end (suffix) of the barcode data. Up to 19 characters can be included in the string. The string can include any character from the keyboard plus characters specified by hex equivalent or entering in hat encoding. Please see *Hat Encoding* for a list of characters with their hex and hat-encoded values.

Using the Escape function allows entering of literal hex and hat values.

Add Prefix	To enable a prefix, check the Prefix checkbox and enter the desired string in the textbox. The default is disabled (unchecked) with a blank text string. When barcode data is processed, the Prefix string is sent to the output buffer before any other data. Because all stripping operations have already occurred, stripping settings do not affect the prefix. The prefix is added to the output buffer for the Symbology selected from the pull down list. If 'All' is selected, the prefix is added for any symbology that has not been specifically configured.
Add Suffix	To enable a suffix, check the Suffix checkbox and enter the desired string in the textbox. The default is disabled (unchecked) with a blank text string. When barcode data is processed, the Suffix string is sent to the output buffer after the barcode data. Because all stripping operations have already occurred, stripping settings do not affect the suffix. The suffix is added to the output buffer for the Symbology selected from the pull down list. If 'All' is selected, the suffix is added for any symbology that has not been specifically configured.

Note: Non-ASCII equivalent keys in Key Message mode are unavailable in this option. Non-ASCII equivalent keys include the function keys (e.g. F1), arrow keys, Page up, Page down, Home, and End.

Length Based Barcode Stripping

Use this procedure to create symbology rules for two barcodes with the same symbology but with different discrete lengths. This procedure is not applicable for barcodes with variable lengths (falling between a maximum value and a minimum value).

Example 1:

- A normal AIM or Symbol symbology role can be created for the desired barcode ID.
- Next, a custom barcode symbology must be created using the same Code ID as the original AIM or Symbol ID rule and each rule would have unique length settings.

Example 2:

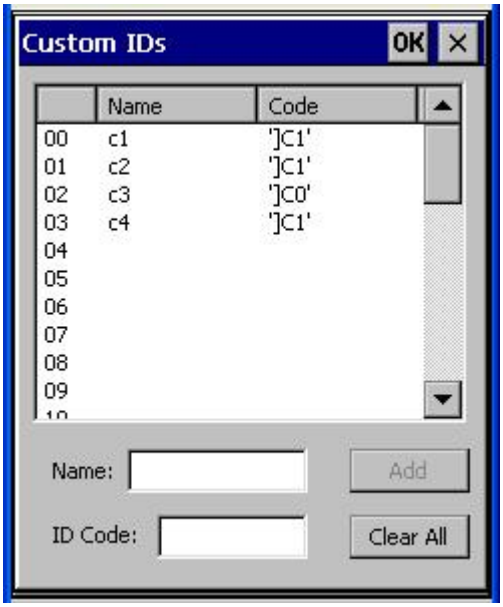
For the purposes of this example, the following sample barcode parameters will be used – EAN 128 and Code 128 barcodes. Some of the barcodes start with '00' and some start with '01'. The barcodes are different lengths.

- 34 character length with first two characters = "01" (strip first 2 and last 18)
- 26 character length with first two characters = "01" (strip first 2 and last 10)
- 24 character length with first two characters = "01" (strip first 2 and last 8). This 24 character barcode is Code 128.
- 20 character length with first two characters = "00" (strip first 0 (no characters) and last 4)

On the Barcode tab, set Enable Code ID to AIM.

Create four custom IDs, using 1 for EAN 128 barcode and 0 for Code 128 barcode.

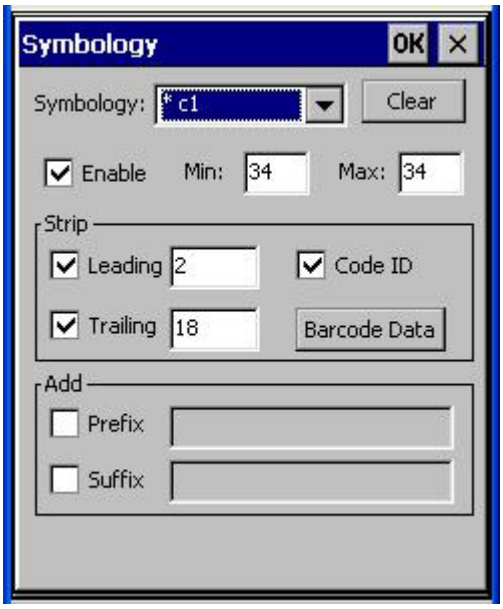
- c1 = Code = ']C1'
- c2 = Code = ']C1'
- c3 = Code = ']C0' (24 character barcode is Code 128)
- c4 = Code = ']C1'



AIM custom symbology setup is assigned in the following manner:

- c1 min length = 34, max length = 34, strip leading 2, strip trailing 18, Code ID enabled, Barcode Data = “01”
- c2 min length = 26, max length = 26, strip leading 2, strip trailing 10, Code ID enabled, Barcode Data = “01”
- c3 min length = 24, max length = 24, strip leading 2, strip trailing 8, Code ID enabled, Barcode Data = “01”
- c4 min length = 20, max length = 20, strip leading 0, strip trailing 4, Code ID enabled, Barcode Data = “00”

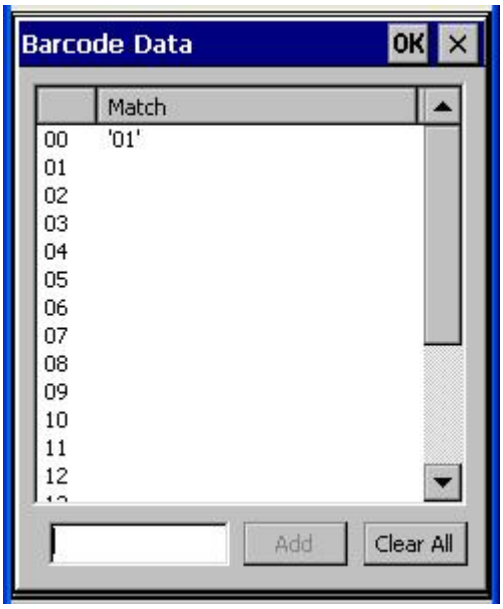
Add the AIM custom symbologies. Refer to the previous section *Barcode – Symbology Settings* for instruction.



Click the Barcode Data button.

Click the Add button.

Add the data for the match codes.



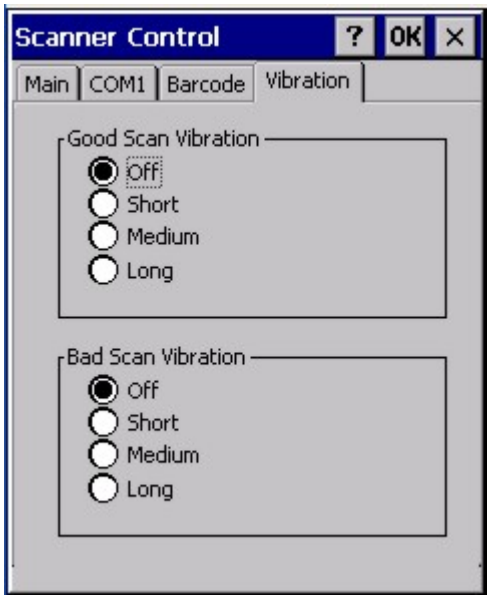
Refer to the previous section Barcode Data Match List for instruction.

Scan a barcode and examine the result.

Vibration Tab

Start | Settings | Control Panel | Scanner | Vibration

Vibration is activated when the trigger on the trigger handle is pressed or either Scan button is pressed. The default setting for both Good Scan and Bad Scan vibration is Off.

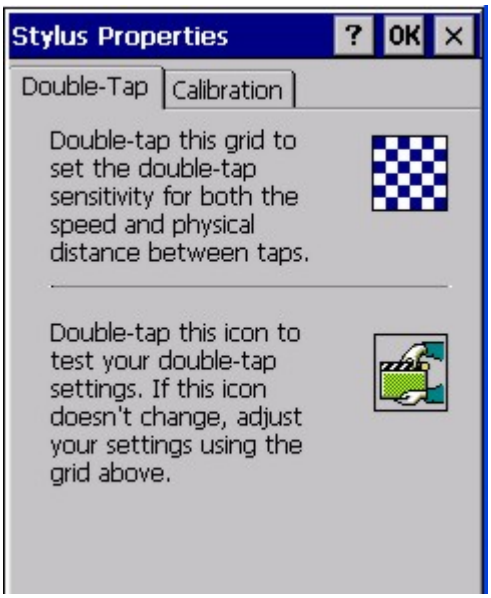


Enable this parameter when a tactile response on a good scan or bad scan is desired. Scan sounds are accompanied by a tactile response when the internal scanner Sound parameter is enabled. Enable short, medium or long duration for each selection (good scan and bad scan).

Stylus

Start | Settings | Control Panel | Stylus

Use this control panel option to set stylus double-tap sensitivity properties and calibrate the MX8 touch panel when needed.


Stylus Properties
?
OK
Double-Tap
Calibration
Double-tap this grid to set the double-tap sensitivity for both the speed and physical distance between taps.
Double-tap this icon to test your double-tap settings. If this icon doesn't change, adjust your settings using the grid above.

Double Tap

Follow the instructions on the screen and tap the OK button to save any double tap changes.

Calibration Tab

Calibration involves tapping the center of a target. If you miss the center, keep the stylus on the screen, slide it over the target's center, and then lift the stylus.

To begin, tap the **Recalibrate** button on the screen with the stylus. Press and hold the stylus on the center of the target as it moves around the screen. Press the Enter key to keep the new calibration setting or press the Esc key to revert to the previous calibration settings.

System

System | Settings | Control Panel | System

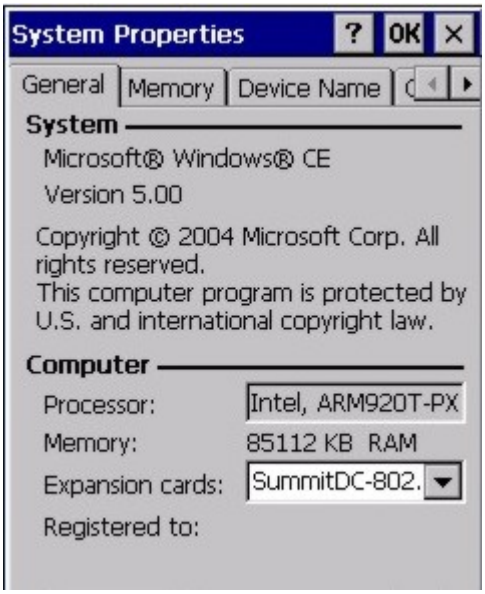
Use these MX8 panels to:

- Review System and mobile device data and revision levels.
- Adjust Storage and Program memory settings.
- Assign a device name and device descriptor.

Factory Default Settings

General	No user interaction
Memory	1/3 storage, 2/3 program memory
Device Name	Unique to equipment type
Device Description	LXE_*unique to equipment type*
Copyrights	No user interaction

General Tab

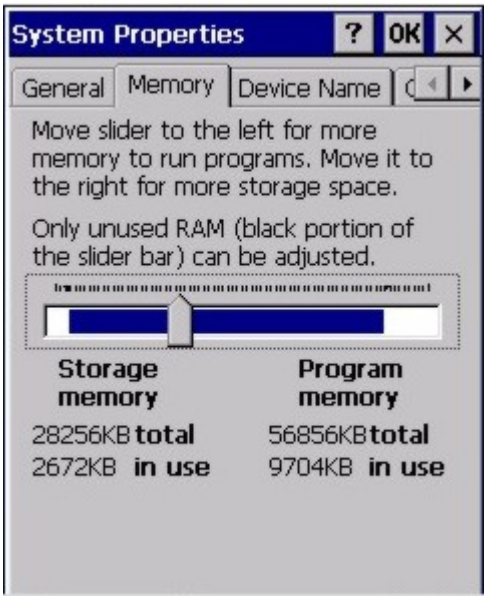


System: This screen is presented for information only. The System parameters cannot be changed by the user.

Computer: The processor type is listed. The type cannot be changed by the user. Total computer memory and the identification of the registered user is listed and cannot be changed by the user.

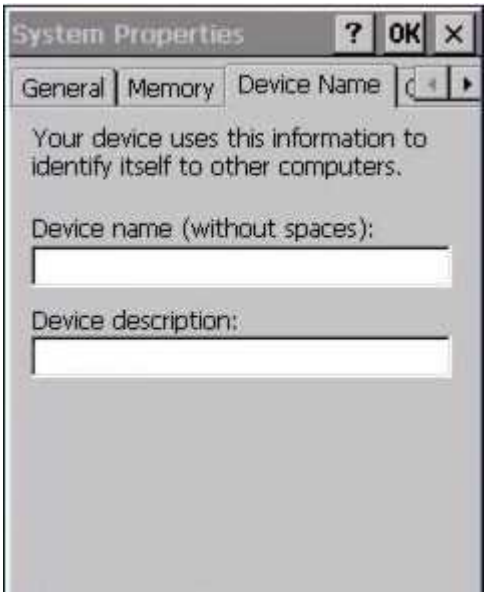
Memory sizes given do not include memory used up by the operating system. For example, a system with 128 MB may only report 99 MB memory, since 29 MB is used by the operating system. This is actual DRAM memory, and does not include internal flash used for storage.

Memory Tab



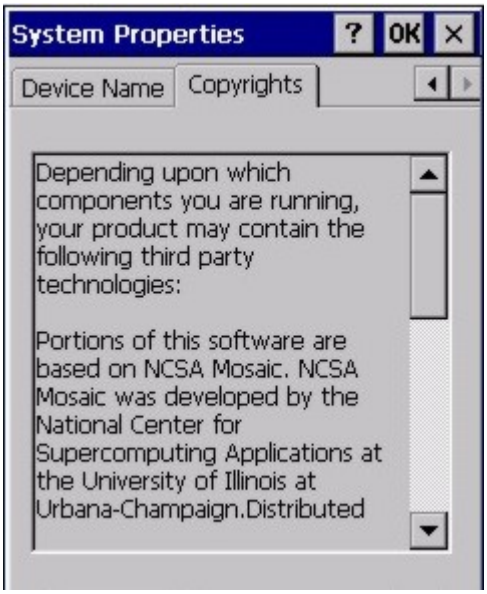
Move the slider to allocate more memory for programs or storage. If there isn't enough space for a file, increase the amount of storage memory. If the mobile device is running slowly, try increasing the amount of program memory.

Device Name Tab



The device name and description can be changed by the user. Enter the name and description using either the keypad or the Input Panel and tap OK to save the changes. This information is used to identify the MX8 to other computers and devices.

Copyrights Tab


System Properties
?
OK
Device Name
Copyrights
Depending upon which components you are running, your product may contain the following third party technologies:
Portions of this software are based on NCSA Mosaic. NCSA Mosaic was developed by the National Center for Supercomputing Applications at the University of Illinois at Urbana-Champaign.Distributed

This screen is presented for information only. The Copyrights information cannot be changed by the user.

Volume and Sounds

Start | Settings | Control Panel | Volume & Sounds

Note: An application may override the control of the speaker volume. Turning off sounds saves power and prolongs battery life.

Set volume parameters and assign sound WAV files to CE events using these options.

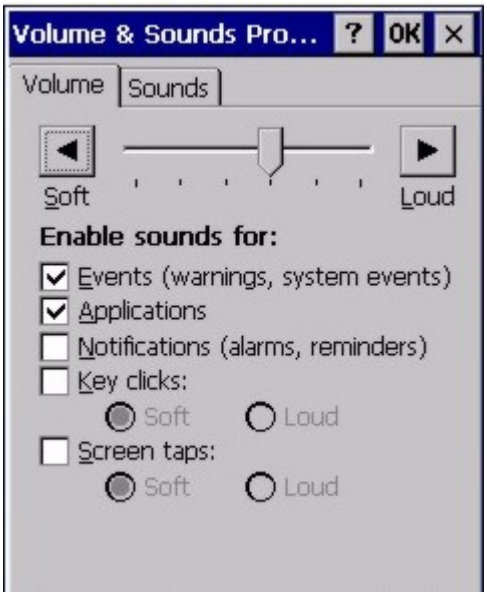
You can also select / deselect sounds for key clicks and screen taps and whether each is loud or soft.

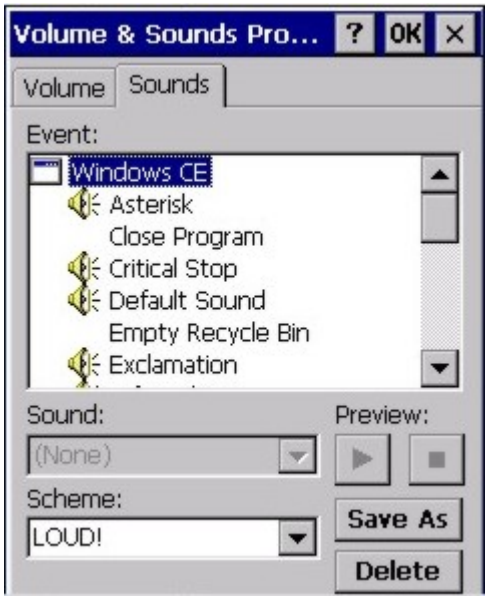
As the volume scrollbar is moved between Loud and Soft, the MX8 emits a tone each time the volume increases or decreases.

Volume must be enabled when you want to adjust volume settings using keypad keys.

Factory Default Settings

Volume	
Events	Enabled
Application	Enabled
Notifications	Disabled
Volume	Middle of Bar
Key click	Disabled
Screen tap	Disabled
Sounds	
Scheme	LOUD!





The volume setting is stored in the registry and is recalled at power on.

Note: Rejected barcodes generate a bad scan beep. In some cases, the receipt of data from the scanner triggers a good scan beep from a tethered scanner, and then the rejection of scanned barcode data by the barcode processing causes a bad scan beep from the mobile device on the same data.

Good Scan and Bad Scan Sounds

Good scan and bad scan sounds are stored in the Windows directory, as SCANGOOD.WAV and SCANBAD.WAV. These are unprotected WAV files and can be replaced by a WAV file of the user's choice.

By default a good scan sound on the MX8 is a single beep, and a bad scan sound is a double beep.

WiFi Control Panel

Start | Settings | Control Panel | WiFi or click the Summit Client Utility icon

Use this option to set parameters and manage profiles for the wireless client pre-loaded on your MX8. See the Summit Client Utility for more information.

Enabler Installation and Configuration

Introduction

This section discusses LXE supported features with Wavelink Avalanche Mobile Device Servers. This section is split into three basic areas:

- Installation
- User Interface
- Enabler Configuration

Installation

To use the Wavelink Avalanche MC System, the following items are required:

- A desktop or laptop PC on which to install the Avalanche MC Console.
- A desktop or laptop PC on which to install the Avalanche Mobile Device Server (this can be the same PC where the Avalanche MC Console is installed).
- Wavelink Avalanche MC Console 4.2 or later.
- A Wavelink Device License for each client device.
- LXE supported mobile devices with Enablers installed.

To use Avalanche Remote Control, the follow additional items are required:

- Wavelink Remote Control plug-in, 2.0 or later
- A Wavelink Remote Control License for each client device

Installing the Enabler on LXE Devices

- LXE CE devices have the Avalanche Enabler installation files loaded, but not installed, on the mobile device when it is shipped from LXE. The installation files are located in the \System folder on CE devices.
- LXE CE devices manufactured before April 2007 must have some software components upgraded before they can use the Avalanche Enabler functions described in this reference guide. Please contact an LXE representative for details on upgrading the mobile device baseline.

*Note: **Important:** If the user is NOT using Wavelink Avalanche to manage their mobile device(s), the Enabler should not be installed on the mobile device(s). Doing so results in unnecessary delays when booting the device.*

Briefly . . .

The Avalanche Enabler installation file (LXE_ENABLER.CAB) is loaded on the MX8 by LXE; however, the device is not configured to launch the Enabler installation file automatically.

The installation application must be run manually the first time Avalanche is used.

After the installation application is manually run, the Enabler will, by default, be an auto-launch application.

This behavior can be modified by accessing the Avalanche Update Settings panel through the Enabler Interface.

The RMU.CE.CAB file is placed on the device during manufacturing in the \System\RMU folder.

During the Enabler installation process, the Enabler checks for the RMU.CE.CAB file in the \System folder.

- If present, it assumes the RMU.CE.CAB file is already installed and continues.
- If the file RMU.CE.CAB file is not present, it looks for the file in the \System\RMU folder.
- If present, the Enabler copies the file to the \System folder and installs it.

At this point, the OS will automatically install the RMU after the MX8 reboots.

Enabler Uninstall Process

To remove the LXE Avalanche Enabler from the MX8:

- Delete the Avalanche folder located in the \System directory.
- Warm boot the MX8.

The Avalanche folder cannot be deleted while the Enabler is running. See Stop the Enabler Service.

If sharing errors occur while attempting to delete the Avalanche folder, warm boot the MX8, immediately delete the Avalanche folder, and then perform another warm boot.

Stop the Enabler Service

To stop the Enabler from monitoring for updates from the Mobility Center Console:

1. Open the Enabler Settings Panels by tapping the Enabler icon on the MX8 desktop.
2. Select **File | Settings**.
3. Select the **Startup/Shutdown** tab.
4. Select the **Do not monitor or launch Enabler** parameter to prevent automatic monitoring upon startup.
5. Select **Stop Monitoring** for an immediate shutdown of all Enabler update functionality upon exiting the user interface.
6. Click the **OK** button to save the changes.
7. **Reboot** the MX8 if necessary.

Update Monitoring Overview

There are three methods by which the Enabler on the MX8 can communicate with the Mobile Device Server running on the host machine.

- Wired via a serial cable between the Mobile Device Server PC and the MX8.
- Wired via a USB connection, using ActiveSync, between the Mobile Device Server PC and the MX8.
- Wirelessly via the MX8 2.4GHz radio and an access point

After installing the Enabler on the MX8 the Enabler searches for a Mobile Device Server, first by polling all available serial ports and then over the wireless network.

The Enabler running on the MX8 will attempt to access COM1, COM2, and COM3. “Agent not found” will be reported if the Mobile Device Server is not located or a serial port is not present or available (COM port settings can be verified using the LXE scanner applet in the Control Panel on the MX8).

Note: Refer to the MX8 reference guide for communication details as there may be differences in capabilities. For example, LXE recommends serial communication with an MX3X be performed using the serial port on the MX3X endcap rather than using a docking cradle serial port.

The wireless connection is made using the default wireless [radio] interface on the mobile device therefore the MX8 must be actively communicating with the network for this method to succeed.

If a Mobile Device Server is found, the Enabler automatically attempts to apply all wireless and network settings from the active profile. The Enabler also automatically downloads and processes all available packages.

If the Enabler does not automatically detect the Mobile Device Server, the IP address of the Mobile Device Server can be entered on the Connect tab of the Enabler setup. Please see Enabler Configuration for details.

Mobile Device Wireless and Network Settings

Once the connection to the Mobile Device Server is established, the MX8 Enabler attempts to apply all network and wireless settings contained in the active profile.

The success of the application of settings is dependent upon the local configuration of control parameters for the Enabler.

These local parameters cannot be overridden from the Avalanche MC Console.

The default Enabler adapter control settings are:

- Manage network settings – enabled
- Use Avalanche network profile – enabled
- Manage wireless settings – disabled for Windows CE devices

To configure the Avalanche Enabler management of the network and wireless settings:

1. Open the Enabler Settings Panels by tapping the **Enabler icon** on the desktop.
2. Select **File | Settings**.
3. Select the **Adapters** tab.
4. Choose settings for the **Use Manual Settings** parameter.
5. Choose settings for **Manage Network Settings**, **Manage Wireless Settings** and **Use Avalanche Network Profile**.

6. Click the **OK button** to save the changes.
7. **Reboot** the device.

Preparing an LXE Device for Remote Management

Two additional utilities are necessary for remote management. These utilities are included on CE mobile devices manufactured after April 2007.

- The **LXE Remote Management Utility (RMU)** must be installed on all LXE mobile devices first – then you can control mobile device reboot, storage RAM adjustment, real-time updates and Avalanche Enabler properties.
  If in doubt, verify RMU.CE.CAB exists in the \System folder. If the RMU.CE.CAB file is present when the Enabler is installed, the RMU is also installed.

  Important: If the OS package includes double-byte Asian fonts, the storage RAM property of the RMU must be higher than the default value (40MB).

  If the amount of storage RAM is too low, the Enabler returns a "Mobile unit out of resources" error.

  To determine the minimum value required, inspect the RMU.StorageRAM>=*nn* parameter in the Criteria field for the OS package. Generally, this setting should be approximately 40 MB above the amount of RAM in use on the device for a standard OS and 50MB above the amount of RAM in use for an OS with Asian fonts.

  For example, if after installing all the software, the device shows 5MB in use, this setting should be about 45MB for a standard OS, 55 MB for an Asian font OS.

- Use the LXE **Wireless Configuration Application (WCA)** when you want to remotely manage the Cisco client or Summit client device. This utility is downloaded and installed in addition to the LXE Remote Management Utility. The WCA is included when the Summit or Cisco radio driver software is updated. The WCA is automatically installed when the radio driver is updated.

If the LXE Remote Management Utility (RMU) is not present on the MX8, see Using Wavelink Avalanche to Upgrade System Baseline.

Using Wavelink Avalanche to Upgrade System Baseline

This procedure assumes the Avalanche Enabler is already installed on the MX8 and is already in communication with the Avalanche MC Console.

Part 1 – Bootstrapping the RMU

1. Install the RMUCEbt package into the Avalanche MC Console. Do NOT include the Reboot option as part of the configuration (i.e. the **Reboot button** in the "Reboot Options" branch must be unbolded).
2. Enable ONLY the RMUCEbt package in the Avalanche MC Console and update the devices. The RMU is downloaded and automatically installed.
3. **Disable** the RMUCEbt package in the Avalanche MC Console.
4. For each device, **double-click** on the device to open the Client Controls dialog box.
5. Check the **Delete Orphaned Packages** checkbox and click the **Update Now** button.
6. After the sync completes, uncheck **Delete Orphaned Packages** and close the dialog box.

Part 2 – Installing Packages

1. **Enable** the RMUCE package in the Avalanche MC Console.
2. **Enable** all remaining packages and send them down. It is important that you include the new OS package in this group (be sure to include the Enabler). If the radio is to be managed remotely, it is important to include the radio package in this group so that after the reboot the radio can automatically associate. If the radio package is not sent, the device loses connection to the network and manual configuration of the radio parameters is required.
3. Set the Reboot setting for the OS package to **Auto**.
4. After all packages are downloaded (this may take several minutes) the RMU is launched. The RMU processes all the downloaded packages. If the radio package was downloaded, the WCA is launched to process the new radio settings.
5. After the RMU finishes installing all the packages, the device is automatically coldbooted (assuming the Reboot setting was set to Auto in Step 3).
6. After the Device completes the coldboot, the RMU is autoinstalled by the OS and the previously downloaded packages are restored. Assuming at least one package has registry settings that were restored, and that package was set to reboot (either auto or prompt), the RMU then performs an automatic warmboot.
7. After the warmboot, the device is configured.
8. If the device will no longer be monitored by Wavelink Avalanche, you may remove the Enabler to eliminate boot up delays, if desired. Even if the Enabler is removed, the installed packages and their configurations continue to be restored with every reboot by the RMU.

Version Information on LXE Mobile Devices

The VersionInfo.EXE file is included in the Remote Management Utility package downloaded to the MX8. It is stored in the \Program Files\RMU folder. When VersionInfo.EXE is opened, a dialog box is presented to the MX8 user displaying:

- Remote Management Utility (RMU) version
- Wireless Configuration Application (WCA) version

VersionInfo displays the version for each utility only after that utility has been executed at least once.

User Interface

The Enabler can be configured and controlled manually through the user interface on the MX8. This section details the functionality that can be controlled by the user or system administrator.

Parameters and Screen Displays

Screen displays shown in this section are designed to present the end-user with information graphically.

Placement of information on the screen displays may be split between one or many tabbed panels.

Standard Avalanche Enabler parameters that are not supported by LXE may be missing or dimmed (visible but unable to be edited) on the tabbed panels or screen displays.

Enabler Configuration

Enabler Settings Icon

The Enabler user interface application is launched by clicking either the **Enabler Settings icon** on the desktop or Taskbar or by selecting **Avalanche Enabler** from the Programs menu.

The opening screen presents the MX8 user with the connection status and a navigation menu.

Avalanche Enabler Opening Screen

Note: Some parameters and features described in this section may not be available if you are not running the latest version of the Enabler. Contact your LXE representative for upgrades.

File Menu Options

Connect	The Connect option under the File menu allows the user to initiate a manual connection to the Mobile Device Server. The connection methods, by default, are wireless and COM connections. Any updates available will be applied to the MX8 immediately upon a successful connection.
Scan Config	*Note: LXE does not support the Scan Configuration feature.* The Scan Config option under the File menu allows the user to configure Enabler settings using a special barcode that can be created using the Avalanche MC Console utilities. Refer to the Wavelink Avalanche Mobility Center User Guide for details.
Settings	The Settings option under the File menu allows the MX8 user to access the control panel to locally configure the Enabler settings. The Enabler control panel is, by default, password protected. The default Settings password is **system** The password is not case-sensitive.

Avalanche Update using File | Settings

Use these menu options to setup the Avalanche Enabler on the MX8. LXE recommends changing settings and then saving the changes (reboot) before connecting to the network.

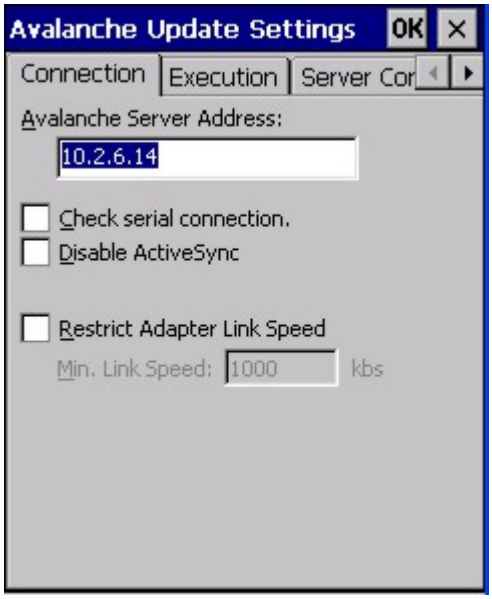
Alternatively, the Mobile Device Server can be disabled until needed (refer to the **Wavelink Avalanche Mobility Center User's Guide** for details).

Menu Options

Note: Your MX8 screen display may not be exactly as shown in the following menu options. Contact your LXE representative for version information and upgrade availability.

Connection	Enter the IP Address or host name of the Mobile Device Server. Set the order in which serial ports or RF connections are used to check for the presence of the Mobile Device Server.
Execution	*Not available in this release*. LXE recommends using AppLock, which is resident on each Windows CE device with the exception of the HX3.
Server Contact	Setup synchronization, scheduled Mobile Device Server contact, suspend and reboot settings.
Startup/Shutdown	Set options for Enabler program startup or shutdown.
Scan Config	This option allows the user to configure Enabler settings using a special barcode that is created by the Avalanche MC Console. *Scan Config not currently supported by LXE.*
Display	Set up the Windows display at startup, on connect and during normal mode. The settings can be adjusted by the user.
Shortcuts	Add, delete and update shortcuts to user-allowable applications.
Adapters	Enable or disable network and wireless settings. Select an adapter and switch between the Avalanche Network Profile and manual settings.
Status	View the current adapter signal strength and quality, IP address, MAC address, SSID, BSSID and Link speed. The user cannot edit this information.

Connection



Connection Options

Avalanche Server Address	Enter the IP Address or host name of the Mobile Device Server assigned to the MX8.
Check Serial Connection	Indicates whether the Enabler should first check for serial port connection to the Mobile Device Server before checking for a wireless connection to the Mobile Device Server.
Disable ActiveSync	Disable ActiveSync connection with the Mobile Device Server.
Restrict Adapter Link Speed	Default is disabled. Minimum Link Speed dimmed.

Execution

Note the dimmed options on this MX8 panel. This menu option is designed to manage downloaded applications for automatic execution upon startup.

Execution Options (Dimmed)

Auto-Execute Selection	An application that has been installed with the Avalanche Management system can be run automatically following each boot.
Select Auto-Execute App	The drop-down box provides a list of applications that have been installed with the Avalanche Management System.
Delay before execution	Time delay before launching Auto-Execute application.

Server Contact

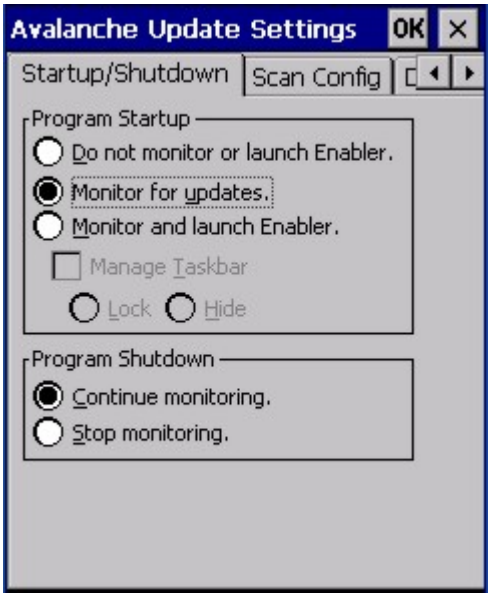
Server Contact Options

Note: Your MX8 screen display may not be exactly as shown above. Contact your LXE representative for upgrade availability and version information.

Sync Clock	Reset the time on the MX8 based on the time on the Mobile Device Server host PC.
Contact	On Startup – Connect to the Mobile Device Server when the Enabler is accessed.
	On Resume – Connect to the Mobile Device Server when resuming from Suspend mode.
	On Ext. Power – Initiate connection to the Mobile Device Server when the device is connected to an external power source, such as based on a docking event.
Periodic Update	Allows the administrator to configure the Enabler to contact the Mobile Device Server and query for updates at a regular interval beginning at a specific time.
Wakeup device if suspended	If the time interval for periodic contact with the Mobile Device Server occurs, a mobile device that is in Suspend Mode can wakeup and process updates.
Reboot before attempt	Reboot mobile device before attempting to contact Mobile Device Server.
Require external power	Only connect when the mobile device has external power.
Use relative offset	Dimmed.

Startup/Shutdown

LXE recommends using LXE AppLock to manage the taskbar. AppLock is resident on each mobile device with a Windows CE OS (with the exception of the HX3). AppLock configuration instructions are located in the MX8 reference guide.

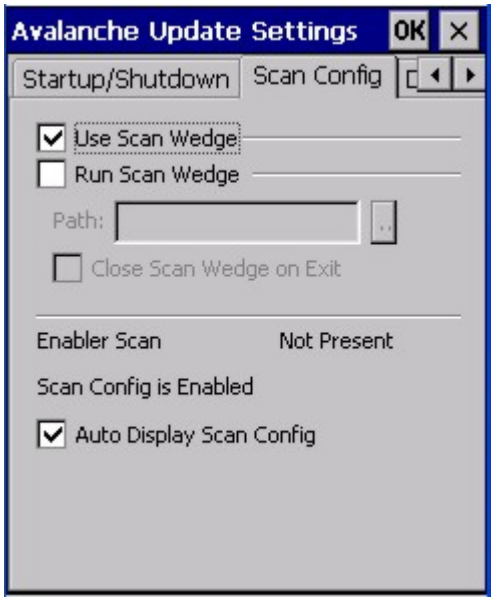


Startup / Shutdown Options

Do not monitor or launch Enabler	When the device boots, do not launch the Enabler application and do not attempt to connect to the Mobile Device Server.
Monitor for updates	Attempt to connect to the Mobile Device Server and process any updates that are available. Do not launch the Enabler application.
Monitor and launch Enabler	Attempt to connect to the Mobile Device Server and process any updates that are available. Launch the Enabler application.
Manage Taskbar (Lock or Hide)	Note the dimmed options. The Enabler can restrict user access to other applications when the user interface is accessed by either locking or hiding the taskbar.
Program Shutdown (Continue or Stop monitoring)	The system administrator can control whether the Enabler continues to monitor the Mobile Device Server for updates once the Enabler application is exited.

Scan Config

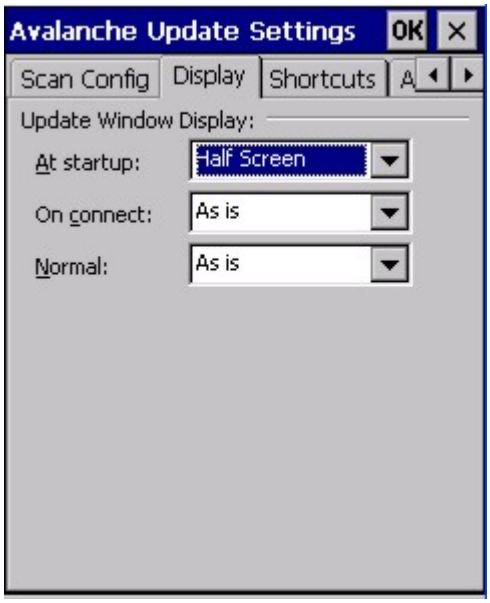
LXE recommends using *LXE eXpress Config* and *eXpress Scan* for this function. eXpress Scan is included with the updated MX8 enablers.



Scan Config Option

Scan Config functionality is a standard option of the Wavelink Avalanche MC system but is *not currently supported by LXE* on the MX8.

Display



Window Display Options

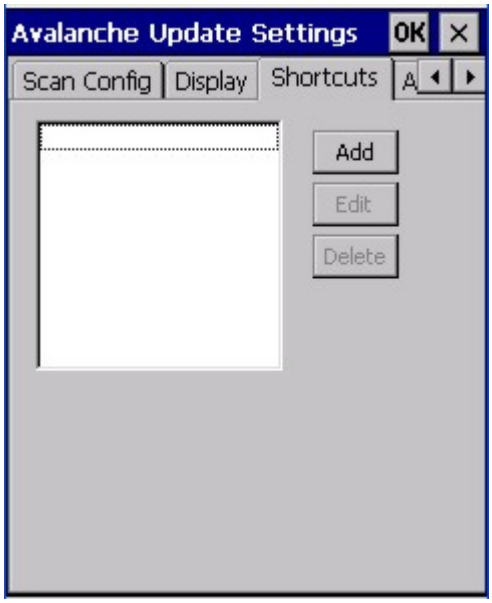
Update Window Display

The user interface for the Enabler can be configured to dynamically change based on the status of the MX8 connection with the Mobile Device Server.

At startup	Default is Half Screen. Options are Half screen, Hidden or Full screen.
On connect	Default is As Is. Options are As is, Half screen, or Full screen.
Normal	Default is As Is. Options are Half screen, Hidden or As Is.

Shortcuts

LXE recommends using LXE AppLock for this function. AppLock is resident on each mobile device with a Windows CE OS. AppLock configuration instructions are located in each equipment-specific reference guide.



Application Shortcuts

Configure shortcuts to other applications on the MX8. Shortcuts are viewed and activated in the Programs panel. This limits the user's access to certain applications when the Enabler is controlling the mobile device display.

LXE recommends using *LXE AppLock* for this function.

Adapters

Note: LXE recommends the user review the network settings configuration utilities and the default values in this guide before setting All Adapters to Enable in the Adapters applet.

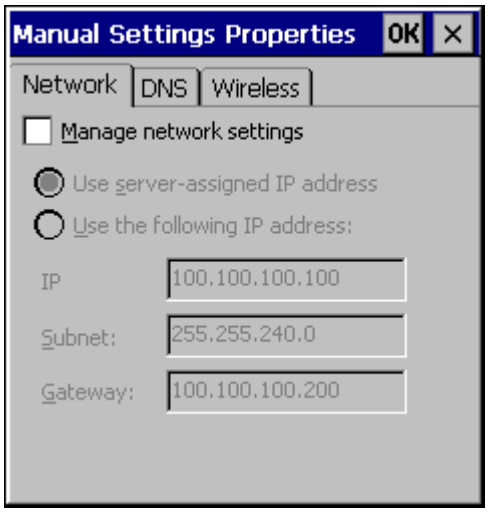
Adapters Options - Network

Manage Network Settings	When enabled, the Enabler will control the network settings. This parameter cannot be configured from the Avalanche Mobility Center Console and is enabled by default.
Manage Wireless Settings	When enabled, the Enabler will control the wireless settings. This parameter cannot be configured from the Avalanche Mobility Center Console and is disabled by default. For Summit clients, Manage Wireless Settings should not be checked as LXE's configuration packages provide more radio configuration options.
Current Adapter	Lists all network adapters currently installed on the MX8.
Primary Adapter	Indicates if the Enabler is to attempt to configure the primary adapter (active only if there are multiple network adapters).
Icon on taskbar	Places the Avalanche icon in the Avalanche taskbar that may, optionally, override the standard Windows taskbar.
Use Avalanche Network Profile	The Enabler will apply all network settings sent to it by the Mobile Device Server.

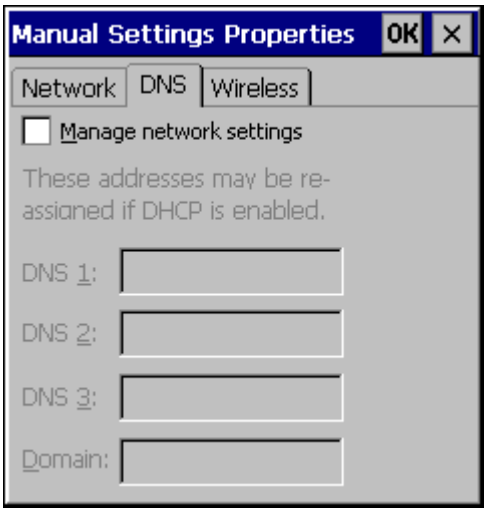
Avalanche Icon	Selecting the Avalanche Icon will access the Avalanche Network Profile tab which will display current network settings.
Use Manual Settings	When enabled, the Enabler will ignore any network or wireless settings coming from the Avalanche MC Console and use only the network settings on the MX8.
Properties Icon	Selecting the Properties icon displays the Manual Settings Properties dialog applet. From here, the user can configure Network, DNS and Wireless parameters using the displays shown below:

Note: A reboot may be required after enabling or disabling these options.

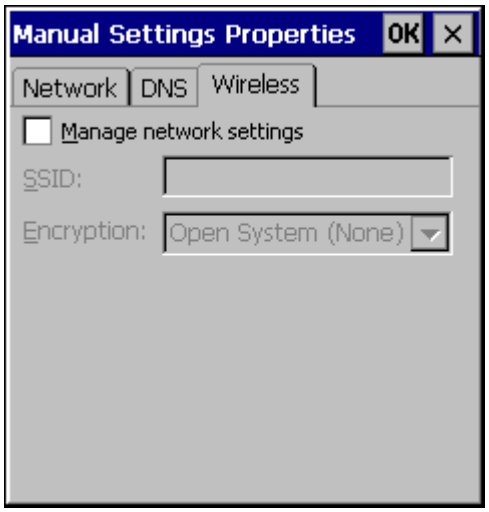
Network



DNS



Wireless



Manual Settings Properties Panels

For MX8 descriptions of these Enabler parameters, refer to the MX8 Reference Guide.

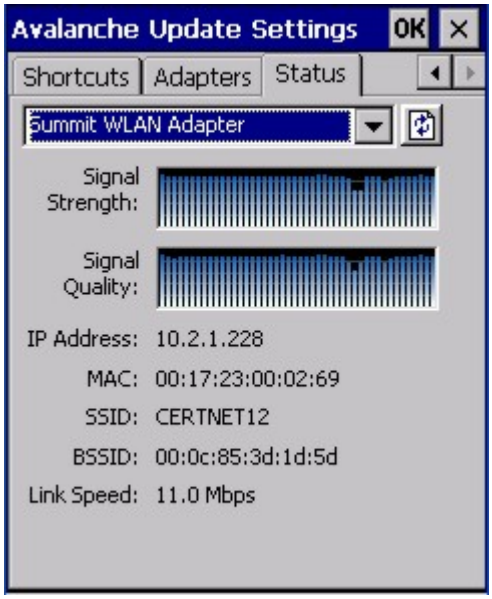
LXE does not recommend enabling “Manage Wireless Settings” for Summit Client devices.

Troubleshooting: When you download a profile that is configured to manage network and wireless settings, the Enabler will not apply the manage network and wireless settings to the adapter unless the global Manage wireless settings and Manage network settings options are enabled on the Adapters panel (see Figure titled Adapters Options – Network, earlier in this section). Until these options are enabled, the network and wireless settings are controlled by the third-party software associated with these settings.

Status

The Status panel displays the current status of the MX8 network adapter selected in the drop down box. Note the availability of the Windows standard Refresh button.

When the Windows Refresh button is tapped, the signal strength, signal quality and link speed are refreshed for the currently selected adapter. It also searches for new adapters and may cause a slight delay to refresh the contents of the drop-down menu.



Status Display

Link speed indicates the speed at which the signal is being sent from the adapter to the MX8. Speed is dependent on signal strength.

Exit

The Exit option is password protected. The default password is **leave**. The password is not case-sensitive.

Exit Password

If changes were made on the MX8Startup/Shutdown tab screen, then after entering the password, tap OK and the following screen is displayed:

Continue or Stop Monitoring

Change the option if desired. Tap the X button to cancel Exit. Tap the OK button to exit the Avalanche applet.

Using Remote Management

For Your MX8

1. Configure the radio to connect to the network running the Mobile Device Server. After the MX8 is connected, proceed to step 2.
2. If it is desired to configure the radio using the Summit package, add the configured package to the Wavelink Avalanche MC Console and enable it.
3. Verify RMU.CE.CAB exists in the \System\RMU folder.
4. Double click the MX8 enabler CAB file in the \System folder.
5. The enabler automatically launches after installation and contacts the Mobile Device Server. The Avalanche MC Console connected to that Mobile Device Server identifies the remote device and performs a sync. This downloads any available packages available for the MX8.

Using eXpress Scan

MX8 eXpress Scan Desktop Icon

If the MX8 has an eXpress Scan icon on the desktop, eXpress Scan may be used for the initial configuration of the device.

If the eXpress Scan icon is not present on the desktop, install the Enabler following the instructions earlier in this section. If the icon is still not present, the Enabler must be updated.

If the eXpress Scan icon is present, follow these steps to configure the MX8 to connect with the wireless network and the Mobile Device Server.

Step 1: Create Barcodes

Barcodes are created with the eXpress Config utility on the desktop/laptop computer, not the mobile device. Depending on the barcode length and the number of parameters selected, eXpress Config generates one or more barcodes for device configuration. The barcodes contain configuration parameters for the wireless client in the LXE device and may also specify the address of the Mobile Device Server.

Barcodes should be printed at a minimum of 600 dpi.

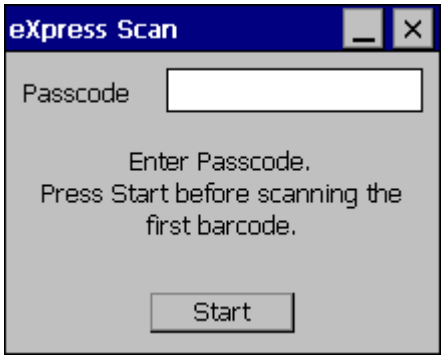
See "Creating Configuration Barcodes with eXpress Config"

Step 2: Scan Barcodes

For each LXE device to be configured, please follow these instructions.

Start eXpress Scan on the MX8 by double clicking the eXpress Scan icon.

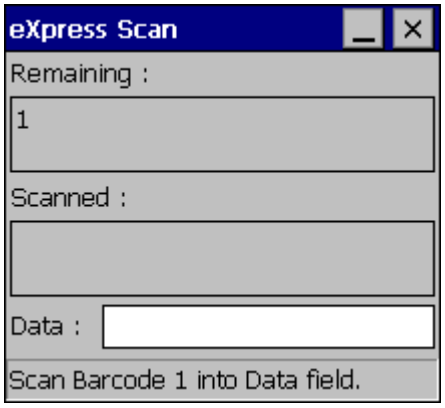
Enter the barcode password, if any.



eXpress Scan Password Input

Click Start.

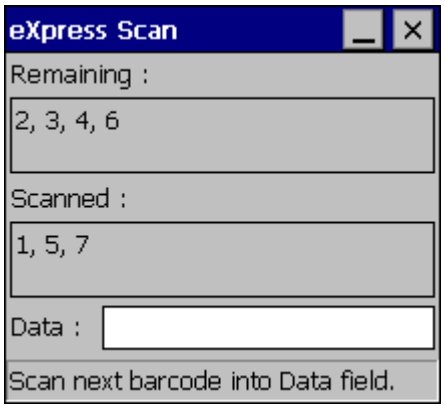
Barcode 1 must be scanned first. The scanned data is displayed in the “Data” text box. The password, if any, entered above is compared to the password entered when the barcodes were created.



Scan Barcode 1

If the passwords match, the barcode data is processed and the screen is updated to reflect the number of barcodes included in the set.

If the passwords do not match, an error message is displayed. The current screen can be closed using the X box in the upper right corner. The password can be re-entered and Barcode 1 scanned again.



Scan Remaining Barcodes

The remaining barcodes may be scanned in any order. After a barcode is scanned, that barcode is removed from the "Remaining:" list and placed in the "Scanned:" list.

Step 3: Process Completion

After the last barcode is scanned, the settings are automatically applied.

Configuring Settings

Once configured, the MX8 is warmbooted. Once connected to the wireless network and the Mobile Device Server, any software updates and additional configuration data are downloaded.

Reset to Default Settings

Note: Important:-- Because of the extreme nature of resetting the MX8 to factory default settings, LXE recommends that this process be used only as an emergency procedure and the Warm Boot be used whenever necessary.

Two different resets are provided on the MX8. User registry settings can be reset to factory defaults using ClearHive.exe or Reset All settings, which includes registry and the persist keys in Launch.reg, can be reset using Coldboot.exe.

Reset Registry

To reset the **MX8 registry** to factory defaults:

1. Tap Start | Run and, using the virtual keyboard or SIP, type CLEARHIVE. Tap the OK button. This command is not case-sensitive.
2. A dialog appears, explaining the restore to default settings process. Select either Yes or Cancel.
3. Selecting Yes causes the reset process to continue and factory default settings are restored when the device powers on again. Selecting Cancel stops the reset process. All previous user settings, authorizations and configurations, wireless connection settings, Bluetooth relationship settings and Control Panel parameter settings are cleared.
4. Programs begin installing and messages are shown on the display as each is installed. When the CE Desktop appears or the final application opens, the reset is complete.

Calibrating the touchscreen will need to be performed during this process. If needed, change the MX8 Time and Date from it's factory default value by tapping Start | Settings | Control Panel | Date/Time icon.

Reset All

To reset **all MX8 configuration** to factory defaults:

Tap **Start | Run** and, using the virtual keyboard or SIP, type **RESETALL**. Tap the OK button. Because of the extreme nature of resetting the MX8 to factory default settings, two confirmation prompts are displayed. To proceed with the reset, select 'Yes' to both prompts. The MX8 cold boots after resetting the configuration. This command is not case-sensitive.

There may be small delays while the wireless client connects to the network, authorization for Voxware-enabled applications complete, Wavelink Avalanche management of the MX8 startup completes, and Bluetooth relationships establish or re-establish.

Note: ResetAll.exe vs ClearHive.exe – The ClearHive.exe utility clears the registry and coldboots the MX8. The ResetAll.exe utility clears the registry, resets the persist keys in the Launch.reg file to factory defaults and coldboots the MX8.

Reflash the MX8

Depending on the size of the operating system, the total time required for successful reflashing may require several minutes.

The OS upgrade files are unique to your MX8's physical configuration and date of manufacture. OS upgrade files designed for one device configuration should not be used on a different device configuration.

Reflash the Operating System

The bootloader and OS are written to onboard flash using the utility **MX8Update.EXE**.

Reflashing and Language Options

Note: If the image to be updated is a non-English Language image (48M), check the Non- English checkbox before updating to a Simplified Chinese, Traditional Chinese, Korean or Japanese version of the OS. The update process may take between 6 and 10 minutes when Non-English is checked. The Non-English checkbox is greyed when the Update is processing.

Same Language to Same Language	During the reflash process all settings revert to factory defaults. Parameters will need to be changed from factory defaults to your preferred values at the conclusion of the reflash process.
Change Language during Reflash Process	When changing from one language to another during the reflash process, all files in system directory will be deleted as the system is repartitioned and all system settings are cleared. Parameters will need to be changed from factory defaults to your preferred values at the conclusion of the reflash process.

Preparation

- LXE recommends that removal or installation of the Mini SD Flash card be performed on a clean, well-lit surface.
- Always perform MX8 updates when it has a fully charged backup battery and/or a dependable external power source connected to the MX8 and a fully charged main battery available.

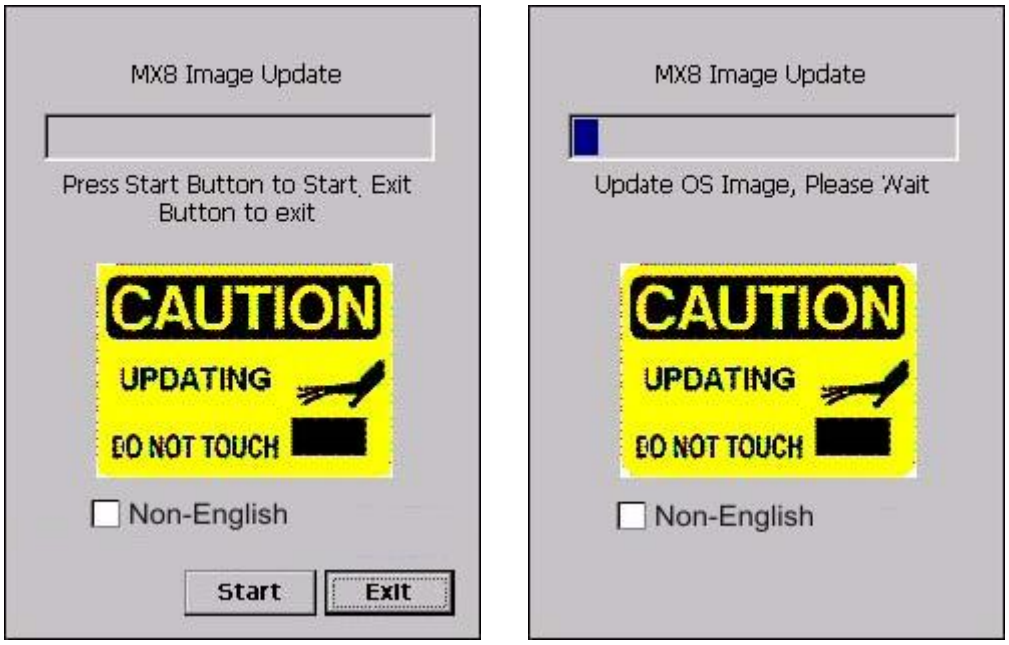
Procedure

Place new image files on a Mini SD card.

Place the MX8 in Suspend Mode and remove the main battery pack.

Lift the rubber barrier and pull the Mini SD card out of the slot. Do not remove the rubber barrier.

1. Place the Mini SD flash card with new image files on it into the SD slot. The label on the SD card is facing up.
2. Launch MX8UPDATE.EXE in My Device | Storage Card.
    - Important: If a failure occurs during the update, DO NOT COLD BOOT. Follow the instructions on the screen to Exit the update utility. Restart the update utility.
3. Tap Start to start the update. The Non-English checkbox is greyed when the Update is processing. Tap Exit to exit without updating.



When the flash update is complete, remove the SD card (if desired), replace the rubber barrier and replace the main battery. The unit automatically performs a cold boot.

Check the OS update version by selecting **Start | Settings | Control Panel | About** or **About LXE | Software** tab.

Command Line Interface

- My Device\System is a priority searching location for the source file, so if My Device\Storage Card is an intended source, make sure there is no corresponding file in My Device\Storage Card.
- If the main battery life is less than 50%, there will be a message box popup to warn the user. The application will wait for user's confirmation before proceeding to update.
- In case of update error, the application will not reboot the system, instead, it will show the error message on screen and wait for user's confirmation to proceed.
- Always perform MX8 updates when there is a fully charged main battery and backup battery and/or a dependable external power source connected to the MX8.

Note: If the application displays "Update OS Image Failed" or "Update Boot Loader Image Failed", do not cold boot the system manually. Perform a warm boot, then try reflashing again. Cold booting will cause an MX8 system crash, since there is no valid image in the system.

Place new image files on a Mini SD card or in the System Folder.

Launch the MX8Update.exe from another application using the following format:

MX8Update.exe –[F|L]

Use the -F language switch for all non-English updates. No language switch is required for English updates. –L is not used.

-path	Specifies the path where the image files are located. Example: MX8Update – path\storage\remote. If the path parameter is not present, MX8Update searches in My Device\System then \Storage Card for the image files
-auto	When this command line option is specified, the update is started automatically. No user interaction is required. The Start button is dimmed.
-fe	Repartitions the on-board flash to a 50MB partition for the OS image.

When the automatic flash update is complete, replace the rubber barrier and replace the main battery.

Troubleshooting

The powered device won't boot up after reflashing finished.

Send the MX8 to LXE Service and Support to be reflashed.

Warning: Opening the device e.g. exchanging Flash cards, removing endcaps or access panels, etc. could void the user's authority to operate this equipment.

Battery State and OS Upgrade

LXE recommends a fully charged main battery be installed in the MX8 prior to reflashing or upgrading the operating system. A prompt may appear when the battery reaches Critical Low that informs the user there is not enough power in the main battery to perform the update.

The operating system will not be able to execute the OS update when the battery level is too low (25% or less), as there is a high risk that the power remaining in the battery expires when executing the update and the MX8 will be left in an inoperable state.

When main battery power level is too low, connect external power to the MX8 before performing the reflash procedure. Do not disconnect external power before the reflash process is complete.

Wireless Network Configuration for LXE Devices

The LXE MX8 uses either a Summit 802.11b/g radio or a Summit 802.11a/b/g radio. The radio can be configured for no encryption, WEP encryption or WPA security.

Please refer to the table below for the security options supported.

Security Options Supported are

- None
- WEP
- LEAP
- WPA-PSK
- WPA/LEAP
- PEAP-MSCHAP
- PEAP-GTC
- EAP-TLS
- EAP-FAST

Important Notes

Date/Time	It is important that all dates are correct on all computers when using any type of certificate. Certificates are date sensitive and if the date is not correct authentication will fail.
	It may be necessary to upgrade radio drivers to in order to use certain Summit Client Utility (SCU) features. Please contact your LXE representative for details.
	When using the 802.11a radio, the U-NII 1 band is the preferred band for indoor operation. For regulatory domains in which the U-NII 3 band is allowed, the following channels are supported: 149, 157 and 161. The AP must be configured accordingly.

The Summit radio is either:

- an 802.11a radio: capable of 802.11a, 802.11b and 802.11g data rates.
- an 802.11g radio: capable of 802.11b and 802.11g data rates.

Summit Client Utility

Note: When making changes to profile or global parameters, the device should be warmbooted afterwards.

Access:

Start | Programs | Summit | SCU *or*

SCU Icon on Desktop *or*

Summit Tray Icon (if present) *or*

Wi-FI Icon in the Windows Control Panel (if present)

The Main Tab provides information, admin login and active profile selection.

Profile specific parameters are found on the Profile Tab. The parameters on this tab can be set to unique values for each profile. This tab was labeled Config in early versions of the SCU.

The Status Tab contains information on the current connection.

The Diags Tab provides utilities to troubleshoot the radio.

Global parameters are found on the Global Tab. The values for these parameters apply to all profiles. This tab was labeled Global Settings in early versions of the SCU.

Help

Help is available by clicking the ? icon in the title bar on most SCU screens.

The SCU help may also be accessed by selecting Start | Help and tapping the Summit Client Utility link. The SCU does not have to be accessed to view the help information using this option.

Summit Tray Icon

The Summit tray icon provides access to the SCU and is a visual indicator of radio status.

The Summit tray icon is displayed when:

- The Summit radio is installed and active
- The Windows Zero Config utility is not active
- The Tray Icon setting is On

Click the icon to launch the SCU.

Use the tray icon to view the radio status:

	The radio is not currently associated or authenticated to an Access Point
	The signal strength for the currently associated/authenticated Access Point is less than -90 dBm
	The signal strength for the currently associated/authenticated Access Point is -71 dBm to -90 dBm
	The signal strength for the currently associated/authenticated Access Point is -51 dBm to -70 dBm
	The signal strength for the currently associated/authenticated Access Point is greater than -50 dBm

Wireless Zero Config Utility and the Summit Radio

WZC Utility icon

- The WZC utility has an icon in the toolbar that looks like networked computers with a red X through them, indicating that Wireless Zero Config application is enabled but the connection is inactive at this time (the device is not connected to a network). The WZC icon may not be visible until control is passed to the WZC utility as described below.
- You can use either the Wireless Zero Configuration Utility or the Summit Client Utility to connect to your network. LXE recommends using the Summit Client Utility to connect to your network. The Wireless Zero Configuration Utility cannot control the complete set of security features of the radio.

How To: Use the Wireless Zero Config Utility

1. Select **ThirdPartyConfig** in the Active Profile drop down list as the active profile (see Main Tab).
2. Warmboot the device.

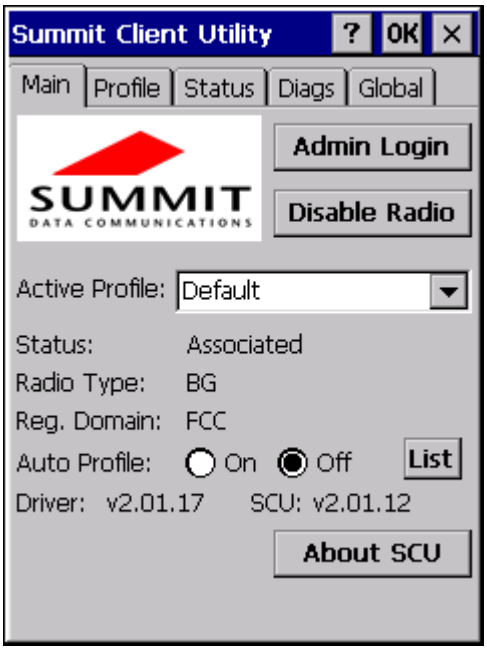
The Summit Client Utility passes control to Wireless Zero Config and the WZC Wireless Information control panel. Using the options in the Wireless Zero Config panels, setup radio and security settings.

How to: Switch Control to SCU

1. To switch back to SCU control, select any other profile in the SCU Active Config drop down list, except **Third-PartyConfig**.
2. Warmboot the device.

Radio control is passed to the SCU.

Main Tab



SCU – Main Tab

The Main tab displays information about the radio including:

- SCU (Summit Client Utility) version
- Driver version
- Radio Type (BG identifies an 802.11b/g radio, ABG identifies an 802.11a/b/g radio)
- Auto Profile option
- Regulatory Domain
- Copyright Info may be accessed by clicking the About SCU button
- Active Profile – Select from the profiles created using the Profile Tab.

Status of the radio (Down, Associated, Authenticated, etc).

The **Disable Radio** button can be used to disable the radio card. Once disabled, the button label changes to **Enable Radio**. By default, the radio is enabled.

The **List** button is used to access the Auto Profile feature.

The **Admin Login** button provides access to editing radio parameters as well as adding, renaming and deleting profiles. Profile and Global parameters may only be edited after entering the Admin Login password. The Active Profile may be changed without logging in. Once logged in, the button label changes to Admin Logout. The admin is also automatically logged out when the SCU is exited.

Admin Login

To login to Admin mode, click the **Admin login** button.

Admin Password Entry

Enter the Admin password and press **OK**. If the password is incorrect, an error message is displayed. The default password is SUMMIT.

Note: The password is case sensitive!

The Admin password can be changed on the Global Tab.

The end user can:

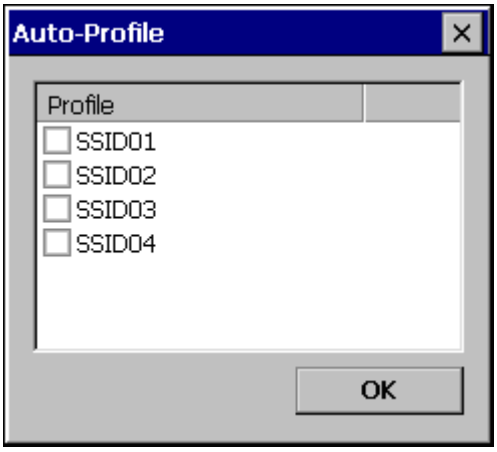
- Turn radio On/Off on the Main Tab
- Select active Profile on the Main Tab
- View the current parameter settings for the profiles on the Profile Tab
- View the global parameter settings on the Global Tab
- View the current connection details on the Status Tab
- View the radio status, software versions and regulatory domain on the Main Tab
- Access additional troubleshooting features on the Diags Tab

After Admin login, the use can also:

- Create, edit, rename and delete profiles on the Profile Tab
- Edit global parameters on the Global Tab

Auto Profile

Auto Profile allows the user to configure a list of profiles that the SCU can search when a radio connection is lost. After using the Profile tab to create any desired profiles, return to the Main tab. To specify which profiles are to be included in Auto Profile, click the List button on the Main tab.



Select Profiles for Auto Profile

The Auto Profile selection screen displays all currently configured profiles. Click on the checkbox for any profiles that are to be included in Auto Profile selection then click **OK** to save.

To enable Auto Profile, click the **On** button on the Main tab.

When Auto Profile is On, if the radio goes out of range from the currently selected profile, the radio then begins to attempt to connect to the profiles listed under Auto Profile.

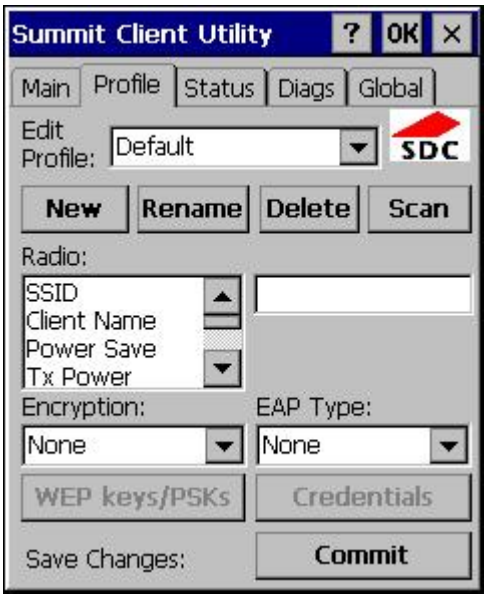
The search continues until:

- the SCU connects to and, if necessary, authenticates with one of the specified profiles or
- until the Off button is clicked to turn off Auto Profile.

Profile Tab

Note: If the Admin password is not entered, the user can view the Profile parameter settings but cannot make any changes. The buttons on this tab are grayed out if the user is not logged in.

The Profile tab was previously labeled Config.



SCU – Profile Tab

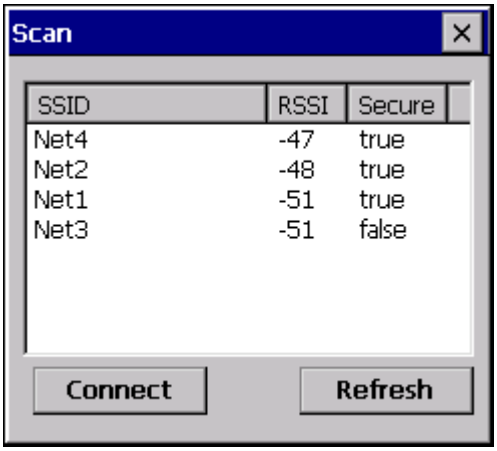
When logged in as an Admin (see Main Tab), use the Profile tab to manage profiles:

- **Rename** – Gives the profile a new, unique name. If the new name is not unique, an error message is displayed and the profile is not renamed.
- **Delete** – Deletes the profile. The current active profile cannot be deleted. In that case, an error message is displayed and the profile is not deleted.
- **New** – Creates a new profile with the default settings (see the list below) and prompts for a name. The name must be unique. If not, an error message is displayed and the profile is not created.
- **Scan** – Scans for and displays a list of available APs. Can be used to create a profile from the APs listed. See Using the Scan Feature
- **Commit** – Ensures that the profile settings made on this screen are saved in the profile.

When not logged in, the parameters can be viewed, but cannot be changed.

Using the Scan Feature

Clicking the **Scan** button opens a pop up window displaying any APs found during the scan.



Scan Results

The scan displays information on the available APs:

- **SSID** – Lists the SSID of the network
- **RSSI** – Displays the Received Signal Strength Indication (RSSI) of the AP.
- **Secure** – Displays True if the data encryption is used by the AP, false is data encryption is not used.

Note: The APs can be sorted by clicking on any of the column headings.

Note: If there is more than one AP with the same SSID, the listing displays the AP with the strongest signal and least security.

If you are logged in as an administrator (see Admin Login), you can use the **Connect** button to create a new profile. The button is grayed out is an administrator is not logged in.

- Highlight the desired network in the listing and click the **Connect** button.
- The new profile is named based on the SSID of the selected AP. If a profile already exists with that name, the new profile name contains an incremental number to avoid duplicate names.
- The SSID parameter is assigned the value of the SSID of the AP. Other profile entries must be completed manually.

Click the **Refresh** button to update the display.

Profile Parameters

IMPORTANT

Remember to click the **Commit** button after making changes to ensure the changes are saved. Newer versions of the SCU display a reminder if the Commit button is not clicked before an attempt is made to close or browse away from the Profile tab if there are unsaved changes.

If changes are made to the *stored credentials*, click Commit to save those changes before making any additional changes to the Profile parameters.

Profile

A string of 1 to 32 alphanumeric characters, establishes the name of the Profile. Options are Default or ThirdPartyConfig.

Default:

Default

SSID

A string of up to 32 alphanumeric characters, the Service Set Identifier (SSID) of the WLAN to which the radio connects

Default:

Blank

Client Name

A string of up to 16 characters – Name assigned to the radio and the device using the radio. The client name may be passed to networking radio devices, e.g. Access Points.

Default:

Blank

Power Save

Power save mode.

Options:

CAM (Constantly Awake Mode, power save off)

Maximum (Maximum power saving mode)

Fast (Fast power saving mode)

Default:

Fast

Tx Power

Desired transmit power.

Options:

Maximum (Max power for current regulatory domain)
50, 30, 20, 10, 5 or 1 mW

Default:

Maximum

Bit Rate

Options:

Auto (Rate negotiated automatically with the AP)
1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48 or 54 Mbit

Default:

Auto

Radio Mode

Specify 802.11a, 802.11b and/or 802.11g rates when communicating with the AP. The options displayed for this parameter depend on the type of radio (802.11b/g or 802.11a/b/g) installed in the MX8.

Options:

B rates only (1, 2, 5.5 and 11 Mbps)

BG Rates Full (All B and G rates)

G rates only (6, 9, 12, 18, 24, 36, 48 and 54 Mbps)

BG optimized or BG subset (1, 2, 5.5, 6, 11, 24, 36 and 54 Mbps)

A rates only (6, 9, 12, 18, 24, 36, 48 and 54 Mbps)

ABG Rates Full (All A rates and all B and G rates with A rates preferred)

BGA Rates Full (All B and G rates and all A rates with B and G rates preferred)

Ad Hoc

Default:

BG Rates Full (for 802.11b/g radio)

BGA Rates Full (for 802.11a/b/g radio)

Note: For the 802.11 b/g radio, some SCU versions may have the default set as BG Optimized rather than BG Rates Full.

It is important this parameter correspond to the AP to which the device is to connect. For example, if this parameter is set to G rates only the LXE device may only connect to APs set for G rates and not those set for B and G rates.

The options for this parameter should be set as follows:

Antenna Configuration	Radio Mode
A Main and BG Main	ABG Rates Full BGA Rates Full
A Main and A Aux	A Rates Only
BG Main and BG Aux	B Rates Only G Rates Only BG Rates Full BG Subset

Contact your LXE representative if you have questions about the antenna(s) installed on your device.

Note: Some versions may have the default set as BG Rates Full.

Auth Type

802.11 authentication type used when associating with AP.

Options:

Open

Shared key

LEAP

Default:

Open

Note: Set the Auth Type radio parameter to "Open" for all configurations unless using LEAP (not WPA) and the AP is configured for network EAP only. In this case, set the Auth Type radio parameter to "LEAP".

EAP Type

Extensible Authentication Protocol (EAP) type used for 802.1x authentication to AP.

Options:

None

LEAP

EAP-FAST

PEAP-MSCHAP

PEAP-GTC

EAP-TLS

Default:

None

Note: The EAP type chosen determines if the Credentials button is active. Available entries on the Credentials pop up window vary by EAP type chosen.

Encryption

Type of encryption used to protect transmitted data. This parameter was labeled as Security in some versions of the SCU.

Options:

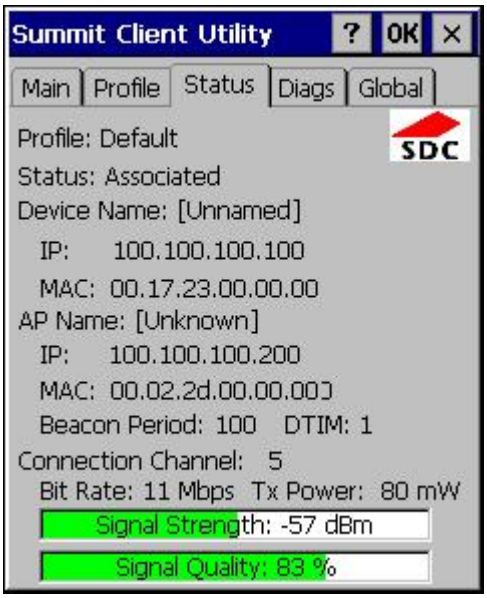
None
Manual WEP
Auto WEP
WPA PSK
WPA TKIP
WPA2 PSK
WPA2 AES
CCKM TKIP
CKIP Manual
CKIP Auto

Default:

None

Note: The Encryption type chosen determines if the WEP/PSK Keys button is active. Available entries on the pop up window vary by encryption type chosen.

Status Tab



SCU – Status Tab

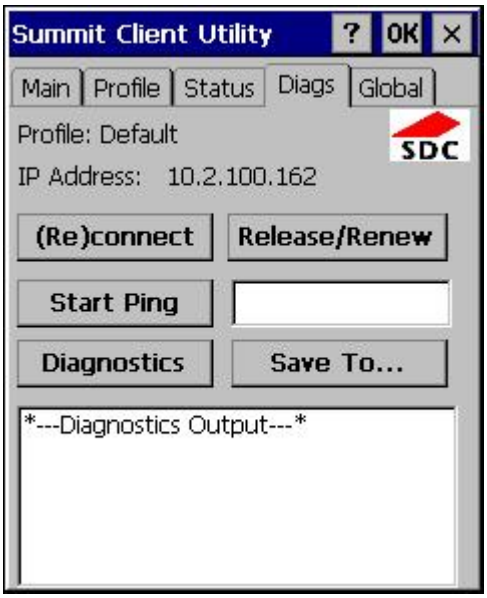
This screen provides information on the radio:

- The profile being used
- The status of the radio card (down, associated, authenticated, etc.)
- Client information including device name, IP address and MAC address.
- Information about the Access Point (AP) maintaining the connection to the network including AP name, IP address and MAC address.
- Channel currently being used for wireless traffic
- Bit rate in Mbit.
- Current transmit power in mW
- Beacon period – the time between AP beacons in kilomircoseconds. (one kilomicrosecond = 1,024 microseconds)
- DTIM interval – A multiple of the beacon period that specifies how often the beacon contains a delivery traffic indication message (DTIM). The DTIM tells power saving devices a packet is waiting for them. For example, if DTIM = 3, then every third beacon contains a DTIM.
- Signal strength (RSSI) displayed in dBm and graphically
- Signal quality, a measure of the clarity of the signal displayed in percentage and graphically.

There are no user entries on this screen.

Note: After completing radio configuration, it is a good idea to review this screen to verify the radio has associated (no encryption, WEP) or authenticated (LEAP, any WPA), as indicated above.

Diags Tab



SCU – Diags Tab

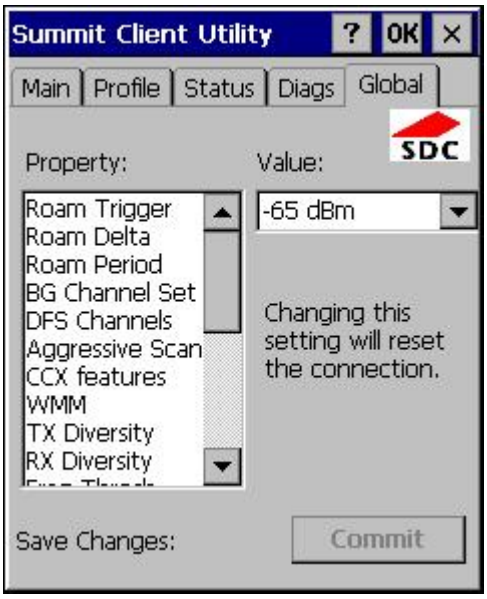
The Diags screen can be used for troubleshooting network traffic and radio connectivity issues.

- **(Re)connect** – Use this button to apply (or reapply) the current profile and attempt to associate or authenticate to the wireless LAN. All activity is logged in the Diagnostic Output box on the lower part of the screen.
- **Release/Renew** – Obtain a new IP address through release and renew. All activity is logged in the Diagnostic Output box. If a fixed IP address has been assigned to the radio, this is also noted in the Diagnostic Output box. Note that the current IP address is displayed above this button.
- **Start Ping** – Start a continuous ping to the IP address specified in the text box to the right of this button. Once the button is clicked, the ping begins and the button label changes to **Stop Ping**. Clicking the button ends the ping. The ping also ends when any other button on this screen is clicked or the user browses away from the Diags tab. The results of the ping are displayed in the Diagnostic Output box.
- **Diagnostics** – Also attempts to (re)connect to the wireless LAN. However, this option provides more data in the Diagnostic Output box than the (Re)connect option. This data dump includes radio state, profile settings, global settings, and a list of broadcast SSID APs.
- **Save To…** – Use this save the results of the diagnostics to a text file. Use the explorer window to specify the name and location for the diagnostic file. The text file can viewed using an application such as WordPad.

Global Tab

Note: The Global tab was previously labeled Global Settings.

The parameters on the global settings tab can be changed when an Admin is logged on (see Admin Login). Without the admin login, the current values for the parameters can be viewed, but they cannot be edited.



SCU – Global Tab

Global Parameters

IMPORTANT

Remember to click the Commit button after making changes to ensure the changes are saved. Many versions of the SCU display a reminder if the Commit button is not clicked before an attempt it made to close or browse away from the Global tab if there are unsaved changes.

If changes are made to the *stored credentials*, click Commit to save those changes before making any additional changes to the Global parameters.

Note: Custom parameter options: Some parameters contain an option for custom. The parameter's value is displayed as "Custom" when the operating system registry has been used to set the parameter to a value not available from the Global settings parameter options. Selecting Custom for a parameter has no effect as the parameter value returns to the previously selected value when you press Commit.

Roam Trigger

If signal strength is less than this trigger value, the radio looks for a different AP with a stronger signal.

Options:

-50, -55, -60, -65, -70, -75, -80, -85, -90 dBm

Custom (see Note)

Note: Available options may vary by SCU revision.

Default:

-65 dBm

Note: Custom parameter options: Some parameters contain an option for custom. The parameter's value is displayed as "Custom" when the operating system registry has been used to set the parameter to a value not available from the Global settings parameter options. Selecting Custom for a parameter has no effect as the parameter value returns to the previously selected value when you press Commit.

Roam Delta

Amount by which the new AP's signal strength must exceed the current AP's signal strength before roaming is attempted.

Options:

5, 10, 15, 20, 25, 30, 35 dBm

Custom (see Note above)

Default:

10 dBm (for 802.11b/g radio)

5 dBm (for 802.11a/b/g radio)

Note: Custom parameter options: Some parameters contain an option for custom. The parameter's value is displayed as "Custom" when the operating system registry has been used to set the parameter to a value not available from the Global settings parameter options. Selecting Custom for a parameter has no effect as the parameter value returns to the previously selected value when you press Commit.

Roam Period

The amount of time, after association or a roam scan with no roam, that the radio collects Received Signal Strength Indication (RSSI) scan data before a roaming decision is made.

Options:

5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60 sec

Custom (see Note above)

Default:

10 seconds (for 802.11b/g radio)

5 seconds (for 802.11a/b/g radio)

Note: Custom parameter options: Some parameters contain an option for custom. The parameter's value is displayed as "Custom" when the operating system registry has been used to set the parameter to a value not available from the Global settings parameter options. Selecting Custom for a parameter has no effect as the parameter value returns to the previously selected value when you press Commit.

Note: Custom parameter options: Some parameters contain an option for custom. The parameter's value is displayed as "Custom" when the operating system registry has been used to set the parameter to a value not available from the Global settings parameter options. Selecting Custom for a parameter has no effect as the parameter value returns to the previously selected value when you press Commit.

BG Channel Set

Defines the 2.4GHz channels to be scanned for an AP when the radio is contemplating roaming. By specifying the channels to search roaming time may be reduced over scanning all channels.

Options:

Full (all channels)

1, 6, 11 (the most commonly used channels)

1, 7, 13 (For ETSI and TELEC radios only)

Custom (see Note above)

Default:

Full

Note: Custom parameter options: Some parameters contain an option for custom. The parameter's value is displayed as "Custom" when the operating system registry has been used to set the parameter to a value not available from the Global settings parameter options. Selecting Custom for a parameter has no effect as the parameter value returns to the previously selected value when you press Commit.

DFS Channels

Note: Not currently supported.

Support for 5GHz 802.11a channels where support for DFS is required.

Options:

On, Off

Default:

Off

Aggressive Scan

When set to On and the current connection to an AP becomes weak, the radio scans for available APs more aggressively. Aggressive scanning works with standard scanning (set through Roam Trigger, Roam Delta and Roam Period). Aggressive scanning should be set to On unless there is significant co-channel interference because of overlapping APs on the same channel.

Options:

On, Off

Default:

On

CCX Features

Use of Cisco Compatible Extensions (CCX) radio management and AP specified maximum transmit power features.

Options:

Full or On (Use Cisco Information Element and CCX version number, support all CCX features)

Optimized (Use Cisco Information Element and CCX version number, support all CCX features except AP assisted roaming, AP specified maximum transmit power and radio management)

Off (Do not use Cisco Information Element and CCX version)

Default:

Off (for 802.11b/g radio)

Optimized (for 802.11a/b/g radio)

WMM

Use of Wi-Fi Multimedia extensions.

Options:

On, Off

Default:

Off

Auth Server

Specifies the type of authentication server.

Options:

Type 1 (ACS server)
Type 2 (non-ACS server)

Default:

Type 1

TX Diversity

How to handle antenna diversity when transmitting packets to AP.

Options:

Main only (Main antenna only)
Aux only (Aux antenna only)
On (Use diversity)

Default:

On (802.11b/g radio)
Main Only (802.11a/b/g radio)
The value for this parameter should be set as follows:

Antenna Configuration	TX Diversity
A Main and BG Main	Main Only
A Main and A Aux	On
BG Main and BG Aux	On

RX Diversity

How to handle antenna diversity when receiving packets from AP.

Options:

Main Only (use main antenna only)

Aux Only (use aux. antenna only)

On-start on Main (On startup use main antenna)

On-start on Aux (On startup use aux antenna)

Default:

On-start on Main (802.11b/g radio)

Main Only (802.11a/b/g radio)

The value for this parameter should be set as follows:

Antenna Configuration	RX Diversity
A Main and BG Main	Main Only
A Main and A Aux	On-start on Main
BG Main and BG Aux	On-start on Main

Frag Thresh

If the packet size (in bytes) exceeds the specified number of bytes set in the fragment threshold, the packet is fragmented (sent as several pieces instead of as one block). Use a low setting in areas where communication is poor or where there is a great deal of radio interference.

Options:

256 to 2346

Default:

2346

RTS Thresh

If the packet size exceeds the specified number of bytes set in the Request to Send (RTS) threshold, an RTS is sent before sending the packet. A low RTS threshold setting can be useful in areas where many client devices are associating with the Access Point.

Options:

0 to 2347

Default:

2347

LED

The LED on the radio card is not visible to the user when the radio card is installed in a sealed MX8.

Options:

On, Off

Default:

Off

Tray Icon

Determines if the Summit icon is displayed in the system tray.

Options:

On, Off

Default:

On

Hide Password

If On, the Summit Client Utility masks passwords as they are typed and when they are viewed.

Options:

On, Off

Default:

On (see note below)

Note: The default value depends on the SCU revision, some have the default as Off.

Admin Password

A string of up to 64 alphanumeric characters that must be entered when the Admin Login button is tapped. If Hide Password is On, the password is masked when typed in the Admin Password Entry text box. The password is Case Sensitive.

Default:

SUMMIT

Note: Password is case sensitive.

Auth Timeout

Specifies the number of seconds the Summit software waits for an EAP authentication request to succeed or fail.

If the authentication credentials are stored in the active profile and the authentication times out, the association fails. No error message or prompting for corrected credentials is displayed.

If the authentication credentials are not stored in the active profile and the authentication times out, the user is again prompted to enter the credentials.

Options:

An integer from 3 to 60

Default:

8

Certs Path

A valid directory path, of up to 64 characters, where Root CA certificates for EAP authentication (PEAP/MSCHAP, PEAP/GTC, EAP-TLS) and manual PACs for EAP-TLS are stored.

The Windows certificate store can also be used to store Root CA certificates. User certificates (EAP-TLS) must be stored in the Windows certificate store.

LXE suggests ensuring the directory path currently exists before assigning the path in this parameter. For example, if the certificate is stored in My Computer/System/mycertificate.cer, enter System in the Certs Path text box as the directory path.

Default:

System

Ping Payload

Maximum amount of data to be transmitted on a ping.

Options:

32, 64, 128, 256, 512, 1024 bytes

Default:

32

Ping Timeout ms

The amount of time, in milliseconds, that a device will be continuously pinged. The Stop Ping button can be tapped to end the ping process ahead of the ping timeout.

Options:

0 to 30,000 ms

Default:

5000

Ping Delay ms

The amount of time, specified in milliseconds, between each ping.

Options:

0 to 30,000 ms

Default:

1000

Sign-On vs. Stored Credentials

When using wireless security that requires a user name and password to be entered, the Summit Client Utility offers two choices:

- The Username and Password may be entered on the Credentials screen. If this method is selected, anyone using the device can access the network.
- The Username and Password are left blank on the Credentials screen. When the device attempts to connect to the network, a sign on screen is displayed. The user must enter the Username and Password at that time to authenticate.

How to: Use Stored Credentials

1. After completing the other entries in the profile, click on the **Credentials** button.
2. Enter the Username and Password on the Credentials screen and click **the OK** button.
3. Click the **Commit** button.
4. For LEAP and WPA/LEAP, configuration is complete.
5. For PEAP-MSCHAP, PEAP-GTC and EAP-TLS import the CA certificate into the Windows certificate store.
6. For EAP-TLS, also import the User Certificate into the Windows certificate store.
7. Access the Credentials screen again. Make sure the **Validate server** and **Use MS store** checkboxes are checked.
8. The default is to use the entire certificate store for the CA certificate. Alternatively, use the **Browse** button next to the CA Cert (CA Certificate Filename) on the Credentials screen to select an individual certificate.
9. For EAP-TLS, also enter the User Cert (User Certificate filename) on the credentials screen by using the **Browse** button.
10. If using EAP FAST and manual PAC provisioning, input the PAC filename and password..
11. Click the **OK** button then the **Commit** button.
12. If changes are made to the stored credentials, click **Commit** to save those changes before making any additional changes to the profile or global parameters.
13. Verify the device is authenticated by reviewing the Status tab. When the device is property configured, the Status tab indicates the device is Authenticated and the method used.

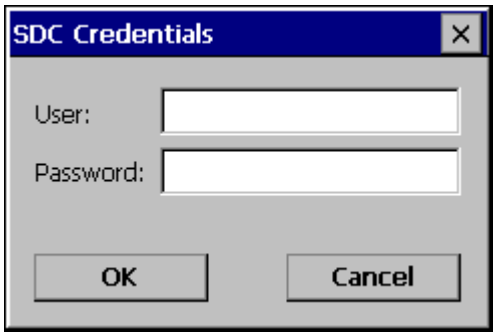
Note: See Configuring the Profile for more details.

Note: If invalid credentials are entered into the stored credentials, the authentication will fail. No error message is displayed and the user is not prompted to enter valid credentials.

How to: Use Sign On Screen

1. After completing the other entries in the profile, click on the **Credentials** button. Leave the Username and Password blank. No entries are necessary on the Credentials screen for LEAP or LEAP/WPA.
2. For PEAP-MSCHAP, PEAP-GTC and EAP-TLS import the CA certificate into the Windows certificate store.
3. For EAP-TLS, also import the User Certificate into the Windows certificate store.
4. Access the Credentials screen again. Make sure the **Validate serve**r and **Use MS store** checkboxes are checked.

5. The default is to use the entire certificate store for the CA certificate. Alternatively, use the Browse button next to the CA Cert (CA Certificate Filename) on the Credentials screen to select an individual certificate.
6. For EAP-TLS, also enter the User Cert (User Certificate filename) on the credentials screen by using the **Browse** button.
7. Click the **OK** button then the **Commit** button.
8. When the device attempts to connect to the network, a sign-on screen is displayed.
9. Enter the Username and Password. Click the **OK** button.



Sign-On Screen

10. Verify the device is authenticated by reviewing the Status tab. When the device is property configured, the Status Tab indicates the device is Authenticated and the method used.
11. The sign-on screen is displayed after a reboot.

Note: See Configuring the Profile for more details.

If a user enters invalid credentials and clicks **OK**, the device associates but does not authenticate. The user is again prompted to enter credentials.

If the user clicks the **Cancel** button, the device does not associate. The user is not prompted again for credentials until

- the device is rebooted,
- the radio is disabled then enabled,
- the **Reconnect** button on the Diags Tab is clicked or
- the profile is modified and the **Commit** button is clicked.

Windows Certificate Store vs. Certs Path

User Certificates

EAP-TLS authentication requires a user certificate. The user certificate must be stored in the Windows certificate store.

- To generate the user certificate, see Generating a User Certificate.
- To import the user certificate into the Windows certificate store, see Installing a User Certificate.
- A Root CA certificate is also needed. Refer to the section below.

Root CA Certificates

Root CA certificates are required for EAP/TLS. PEAP/GTC. PEAP/MSCHAP. EAP/TLS, PEAP/GTC and PEAP/MSCHAP. Two options are offered for storing these certificates. They may be imported into the Windows certificate store or copied into the Certs Path directory.

How To: Use the Certs Path

1. See Generating a Root CA Certificate and follow the instructions to download the Root Certifcate to a PC.
2. Copy the certificate to specified directory on the mobile device. The default location for Certs Path is \System. A different location may be specified by using the Certs Path global variable. Please note the location chosen for certificate storage should persist after warmboot.
3. When completing the Credentials screen for the desired authentication, do not check the **Use MS store** checkbox after checking the **Validate server** checkbox.
4. Enter the certificate name in the CA Cert textbox.
5. Click **OK** to exit the Credentials screen and then **Commit** to save the profile changes.

How To: Use Windows Certificate Store

1. See Generating a Root CA Certificate and follow the instructions to download the Root Certifcate to a PC.
2. To import the certificate into the Windows store, See Installing a Root CA Certificate.
3. When completing the Credentials screen for the desired authentication, be sure to check the **Use MS store** checkbox after checking the **Validate server** checkbox.
4. The default is to use all certificates in the store. If this is OK, skip to the last step.
5. Otherwise, to select a specific certificate click on the **Browse (…)** button.

Choose Certificate

6. Uncheck the **Use full trusted store** checkbox.
7. Select the desired certificate and click the **Select** button to return the selected certificate to the CA Cert textbox.
8. Click **OK** to exit the Credentials screen and then **Commit** to save the profile changes.

Configuring the Profile

Use the instructions in this section to complete the entries on the Profile tab according to the type of wireless security used by your network. The instructions that follow are the minimum required to successfully connect to a network. Your system may require more parameters than are listed in these instructions. Please see your system administrator for complete information about your network and its wireless security requirements.

To begin the configuration process:

- On the Main Tab, click the Admin Login button and enter the password.
- LXE recommends editing the default profile with the parameters for your network. Select the Default profile from the pull down menu.
- Make any desired parameter changes as described in the applicable following section determined by network security type and click the **Commit** button to save the changes.

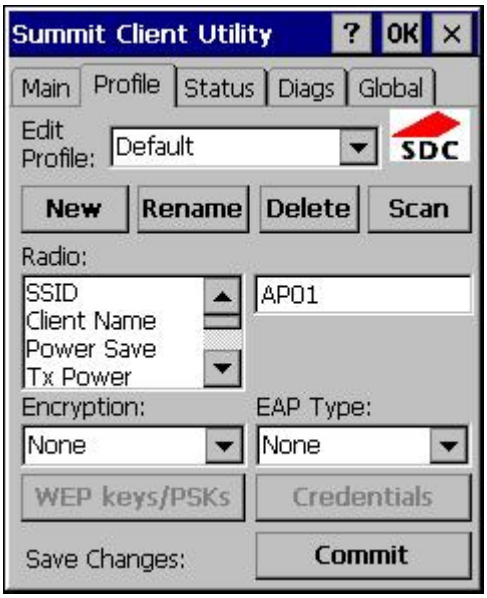
IMPORTANT – Remember to click the Commit button after making changes to ensure the changes are saved. Many versions of the SCU display a reminder if the Commit button is not clicked before an attempt is made to close or browse away from the tab in focus if there are unsaved changes.

If changes are made to the *stored credentials*, click Commit to save those changes first before making any additional changes.

No Security

To connect to a wireless network with no security, make sure the following profile options are used.

- Enter the **SSID** of the Access Point assigned to this profile
- Set **EAP Type** to **None**
- Set **Encryption** to **None**
- Set **Auth Type** to **Open**



No Security Profile Configuration

Once configured, click the **Commit** button. Ensure the correct Active Profile is selected on the Main tab and warmboot. The SCU Main tab shows the device is associated after the radio connects to the network.

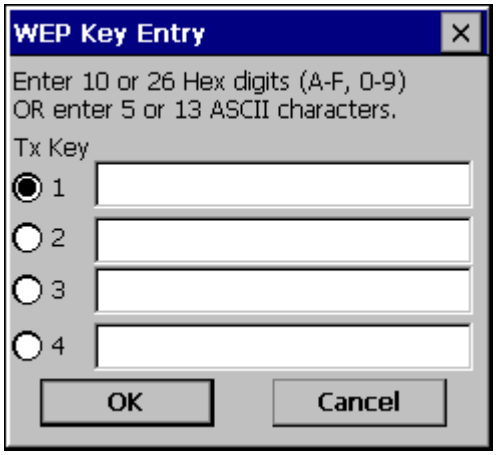
WEP

To connect using WEP, make sure the following profile options are used.

- Enter the **SSID** of the Access Point assigned to this profile
- Set **EAP Type** to **None**
- Set **Encryption** to **Manual WEP**
- Set **Auth Type** to **Open**

WEP Profile Configuration

Click the **WEP keys/PSKs** button.



WEP Keys

Valid keys are 10 (for 40-bit encryption) or 26 (for 128-bit encryption) hexadecimal characters. Enter the key(s) and click **OK**.

Once configured, click the Commit button. Ensure the correct Active Profile is selected on the Main tab and warmboot. The SCU Main tab shows the device is associated after the radio connects to the network.

LEAP

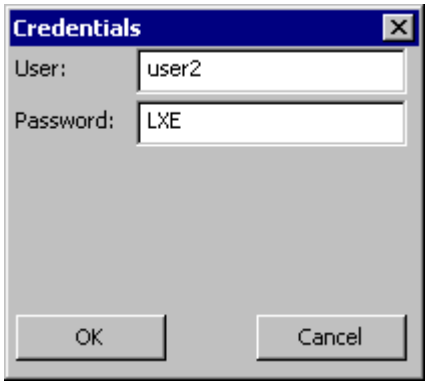
To use LEAP (without WPA), make sure the following profile options are used.

- Enter the **SSID** of the Access Point assigned to this profile
- Set **EAP Type** to **LEAP**
- Set **Encryption** to **Auto WEP**
- Set **Auth Type** as follows:
  - If the Cisco/CCX certified AP is configured for open authentication, set the **Auth Type** radio parameter to **Open**.
  - If the AP is configured for network EAP only, set the **Auth Type** radio parameter to **LEAP**.

LEAP Profile Configuration

See Sign-On vs. Stored Credentials for information on entering credentials.

To use Stored Credentials, click on the **Credentials** button. No entries are necessary for Sign-On Credentials as the user will be prompted for the Username and Password when connecting to the network.



WPA/LEAP Credentials

Enter the Domain\Username (if the Domain is required), otherwise enter the Username.

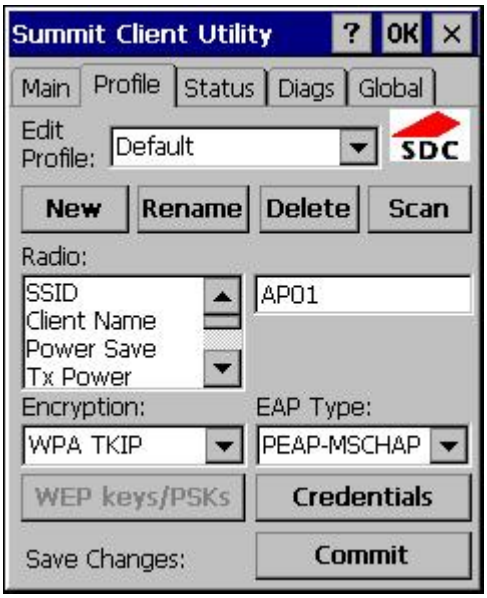
Enter the password.

Click **OK** then click **Commit**. Ensure the correct Active Profile is selected on the Main Tab and warmboot. The SCU Main tab shows the device is associated after the radio connects to the network.

PEAP/MSCHAP

To use PEAP/MSCHAP, make sure the following profile options are used.

- Enter the **SSID** of the Access Point assigned to this profile
- Set **EAP Type** to **PEAP-MSCHAP**
- Set **Encryption** to **WPA TKIP**
- Set **Auth Type** to **Open**



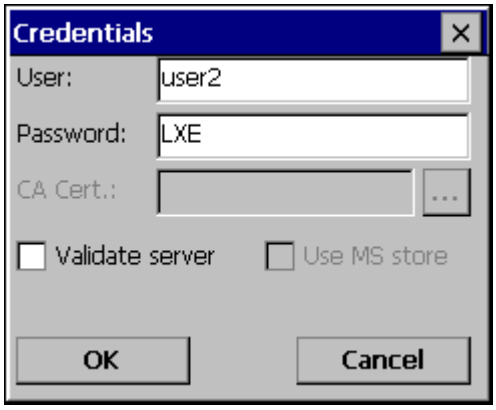
PEAP/MSCHAP Profile Configuration

See Sign-On vs. Stored Credentials for information on entering credentials.

Click the **Credentials** button.

- No entries except the CA Certificate Filename are necessary for Sign-On Credentials as the user will be prompted for the User Name and Password when connecting to the network.
- For Stored Credentials, User, Password and the CA Certificate Filename must be entered.

Enter these items as directed below.



PEAP/MSCHAP Credentials

Enter the Domain\Username (if the Domain is required), otherwise enter the Username.

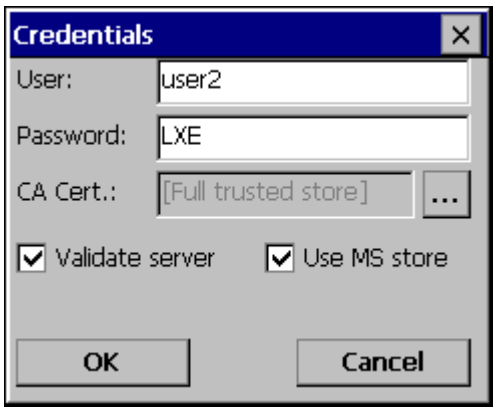
Enter the password.

Leave the CA Certificate File Name blank for now.

Click **OK** then click **Commit**. Ensure the correct Active profile is selected on the Main Tab.

See Windows Certificate Store vs. Certs Path for more information on certificate storage.

Once successfully authenticated, import the CA certificate into the Windows certificate store. Return to the Credentials screen and check the **Validate server** checkbox.



PEAP/MSCHAP Certificate Filename

If using the Windows certificate store:

- Check the **Use MS store** checkbox. The default is to use the Full Trusted Store.
- To select an individual certificate, click on the **Browse** button.
- Uncheck the **Use full trusted store** checkbox.
- Select the desired certificate and click Select. You are returned to the Credentials screen.

If using the Certs Path option:

- Leave the **Use MS store** box unchecked.
- Enter the certificate filename in the CA Cert textbox.

Click **OK** then click **Commit**.

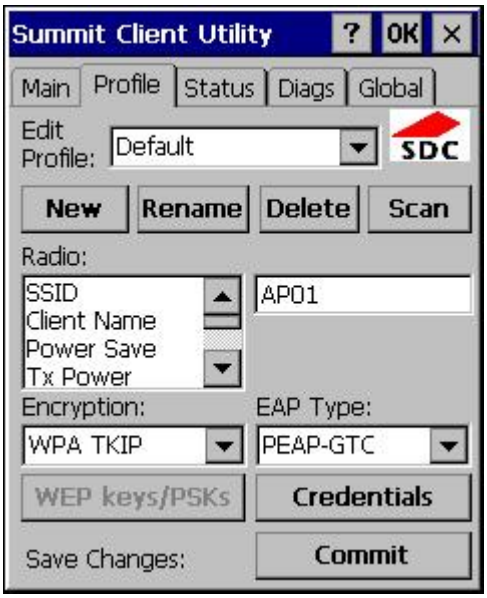
The device should be authenticating the server certificate and using PEAP/MSCHAP for the user authentication.

Note: The date must be properly set on the device to authenticate a certificate.

PEAP/GTC

To use PEAP/GTC, make sure the following profile options are used.

- Enter the **SSID** of the Access Point assigned to this profile
- Set **EAP Type** to **PEAP-GTC**
- Set **Encryption** to **WPA TKIP**
- Set **Auth Type** to **Open**



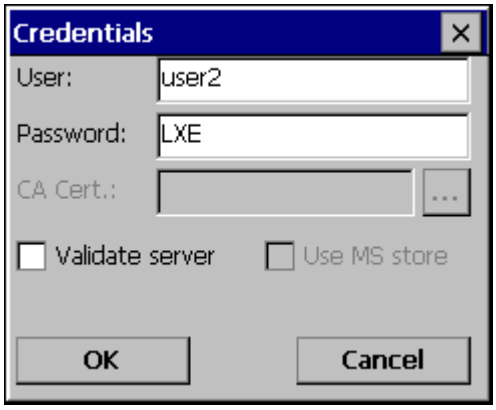
PEAP/GTC Profile Configuration

See Sign-On vs. Stored Credentials for information on entering credentials.

Click the **Credentials** button.

- No entries except the CA Certificate Filename are necessary for Sign-On Credentials as the user will be prompted for the User Name and Password when connecting to the network.

Enter these items as directed below.



PEAP/GTC Credentials

Enter the Domain\Username (if the Domain is required), otherwise enter the Username.

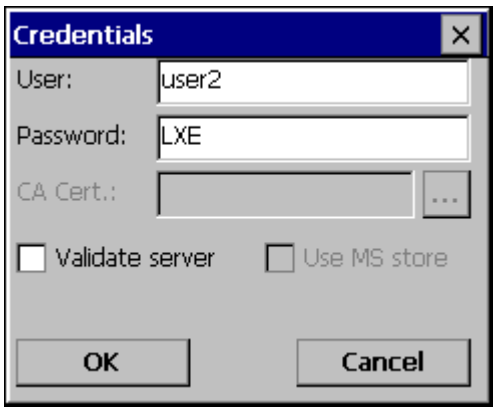
Enter the password.

Leave the CA Certificate File Name blank for now.

Click **OK** then click **Commit**. Ensure the correct Active Profile is selected on the Main Tab.

See Windows Certificate Store vs. Certs Path for more information on certificate storage.

Once successfully authenticated, import the CA certificate into the Windows certificate store. Return to the Credentials screen and check the **Validate server** checkbox.



PEAP/GTC Certificate Filename

If using the Windows certificate store:

- Check the **Use MS store** checkbox. The default is to use the Full Trusted Store.
- To select an individual certificate, click on the **Browse** button.
- Uncheck the **Use full trusted store** checkbox.
- Select the desired certificate and click **Select**. You are returned to the Credentials screen.

If using the Certs Path option:

- Leave the **Use MS store box** unchecked.
- Enter the certificate filename in the CA Cert textbox.

Click **OK** then click **Commit**.

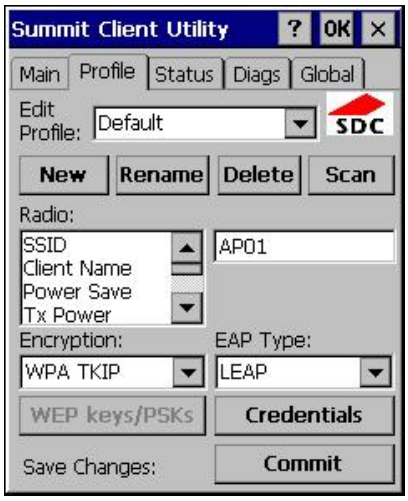
The device should be authenticating the server certificate and using PEAP/MSCHAP for the user authentication.

Note: The date must be properly set on the device to authenticate a certificate.

WPA/LEAP

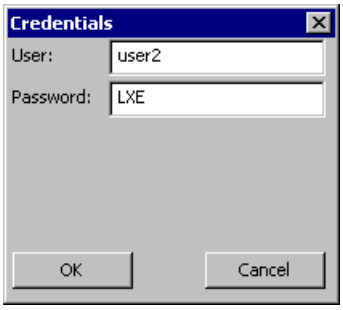
To use WPA/LEAP, make sure the following profile options are used.

- Enter the **SSID** of the Access Point assigned to this profile
- Set **EAP Type** to **LEAP**
- Set **Encryption** to **WPA TKIP**
- Set **Auth Type** as follows:
  - If the Cisco/CCX certified AP is configured for open authentication, set the **Auth Type** radio parameter to **Open**.
  - If the AP is configured for network EAP only, set the **Auth Type** radio parameter to **LEAP**.



WPA/LEAP Profile Configuration

See Sign-On vs. Stored Credentials for information on entering credentials. To use Stored Credentials, click on the **Credentials** button. No entries are necessary for Sign-On Credentials as the user will be prompted for the Username and Password when connecting to the network.



WPA/LEAP Credentials

Enter the Domain\Username (if the Domain is required), otherwise enter the Username.

Enter the password.

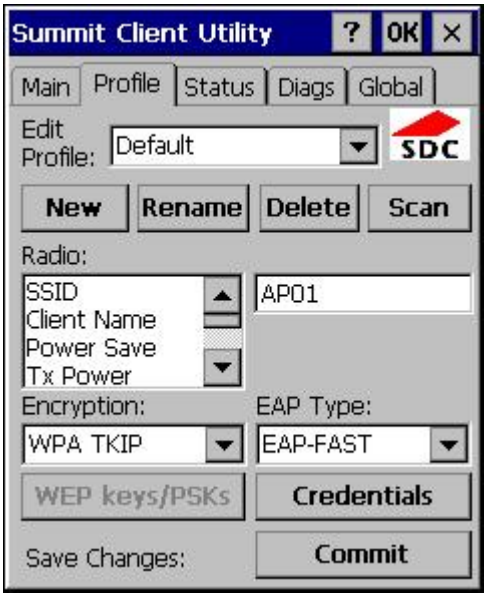
Click **OK** then click **Commit**. Ensure the correct Active Profile is selected on the Main Tab and warmboot. The SCU Main tab shows the device is associated after the radio connects to the network.

EAP-FAST

To use EAP-FAST, make sure the following profile options are used.

- Enter the **SSID** of the Access Point assigned to this profile
- Set **EAP Type** to **EAP-FAST**
- Set **Encryption** to **WPA TKIP**
- Set **Auth Type** to **Open**

The SCU supports EAP-FAST with automatic or manual PAC provisioning. With automatic PAC provisioning, the user credentials, whether entered on the saved credentials screen or the sign on screen, are sent to the RADIUS server. The RADIUS server must have auto provisioning enabled to send the PAC provisioning credentials to the MX8.



EAP-FAST Profile Configuration

For automatic PAC provisioning, once a username/password is authenticated, the PAC information is stored on the MX8. The same username/password must be used to authenticate each time. See the note below for more details.

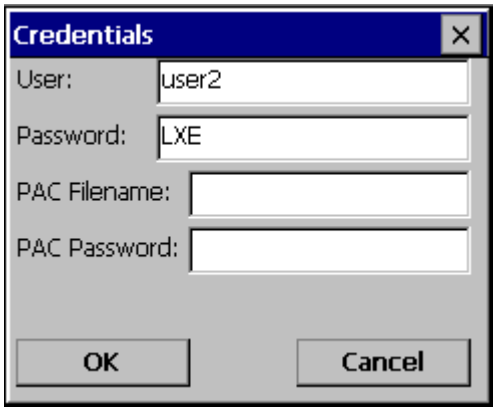
For manual PAC provisioning, the PAC filename and Password must be entered.

See Sign-On vs. Stored Credentials for information on entering credentials.

The entries on the Credentials screen are determined by the type of credentials (stored or sign on) and the type of PAC provisioning (automatic or manual).

Click on the **Credentials** button.

To use Stored Credentials, click on the **Credentials** button. No entries are necessary for Sign-On Credentials with automatic PAC provisioning as the user will be prompted for the Username and Password when connecting to the network.



EAP-FAST Credentials

To use Sign-On credentials:

- Do not enter a User and Password as the user will be prompted for the Username and Password when connecting to the network.

To use Stored Credentials:

- Enter the Domain\Username (if the Domain is required), otherwise enter the Username.
- Enter the password.

To use Automatic PAC Provisioning:

- No additional entries are required.

To use manual PAC Provisioning:

- Enter the PAC Filename and PAC Password.
- The PAC file must be copied to the directory specified in the Certs Path global variable. The PAC file must not be read only.

Tap **OK** then tap **Commit**. Ensure the correct Active Profile is selected on the Main tab and warmboot. The SCU Main tab shows the device is associated after the radio connects to the network.

Note: When using Automatic PAC Provisioning, once authenticated, there is a file stored in the \System directory with the PAC credentials. If the username is changed, that file must be deleted. The filename is autoP.00.pac.

EAP-TLS

To use EAP-TLS, make sure the following profile options are used.

- Enter the **SSID** of the Access Point assigned to this profile
- Set **EAP Type** to **EAP-TLS**
- Set **Encryption** to **WPA TKIP**
- Set **Auth Type** to **Open**

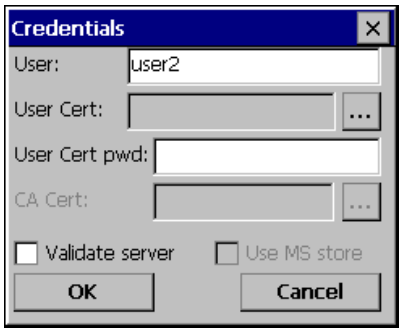
EAP-TLS Profile Configuration

See Sign-On vs. Stored Credentials for information on entering credentials.

Click the **Credentials** button.

- No entries except the User Certificate Filename and the CA Certificate Filename are necessary for Sign-On Credentials as the user will be prompted for the User Name and Password when connecting to the network.
- For Stored Credentials, User, Password and the CA Certificate Filename must be entered.

Enter these items as directed below.



EAP-TLS Credentials

Enter the Domain\Username (if the Domain is required), otherwise enter the Username.

Leave the certificate file name entries blank for now.

Click **OK** then click **Commit**. Ensure the correct Active Profile is selected on the Main tab.

Once successfully authenticated, import the user certificate into the Windows certificate store.

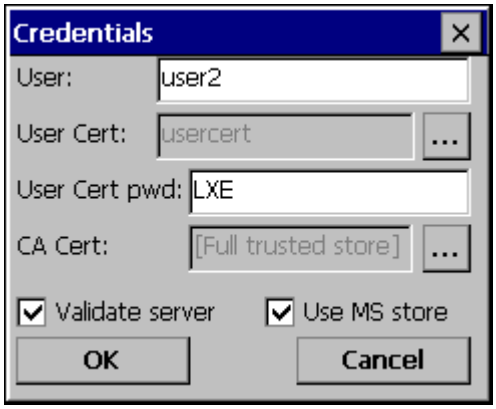
Return to the Credentials screen.

Use the **Browse** button to locate the User Cert from the certificate store. Highlight the desired certificate and press the **Select** button. The name of the certificate is displayed in the User Cert box.

Enter the password for the user certificate in the User Cert pwd box.

See Windows Certificate Store vs. Certs Path for more information on certificate storage.

Check the **Validate server** checkbox.



EAP-TLS Credentials

If using the Windows certificate store:

- Check the **Use MS store** checkbox. The default is to use the Full Trusted Store.
- To select an individual certificate, click on the **Browse** button.
- Uncheck the **Use full trusted store** checkbox.
- Select the desired certificate and click **Select**. You are returned to the Credentials screen.

If using the Certs Path option:

- Leave the Use MS store box unchecked.
- Enter the certificate filename in the CA Cert textbox.

Click **OK** then click **Commit**.

The MX8 should be authenticating the server certificate and using EAP-TLS for the user authentication.

See Certificates for information on generating a Root CA certificate or a User certificate.

Note: The date must be properly set on the device to authenticate a certificate.

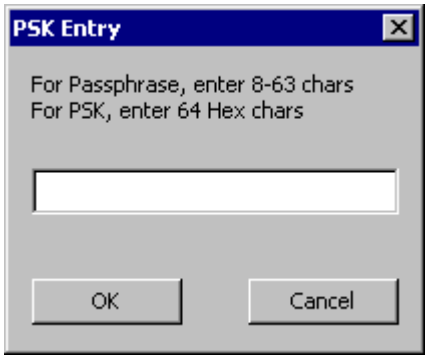
WPA PSK

To connect using WPA/PSK, make sure the following profile options are used:

- Enter the **SSID** of the Access Point assigned to this profile
- Set **EAP Type** to **None**
- Set **Encryption** to **WPA PSK**
- Set **Auth Type** to **Open**

WPA/PSK Profile Configuration

Click the **WEP keys/PSKs** button.



PSK Entry

This value can be 64 hex characters or an 8 to 63 byte ASCII value. Enter the key and click **OK**.

Once configured, click the **Commit** button. Ensure the correct Active Profile is selected on the Main Tab and warmboot. The SCU Main tab shows the device is associated after the radio connects to the network.

Certificates

Root Certificates are necessary for EAP-TLS, PEAP/GTC and PEAP/MSCHAP.

See Generating a Root CA Certificate

See Installing a Root CA Certificate

User Certificates are necessary for EAP-TLS

See Generating a User Certificate

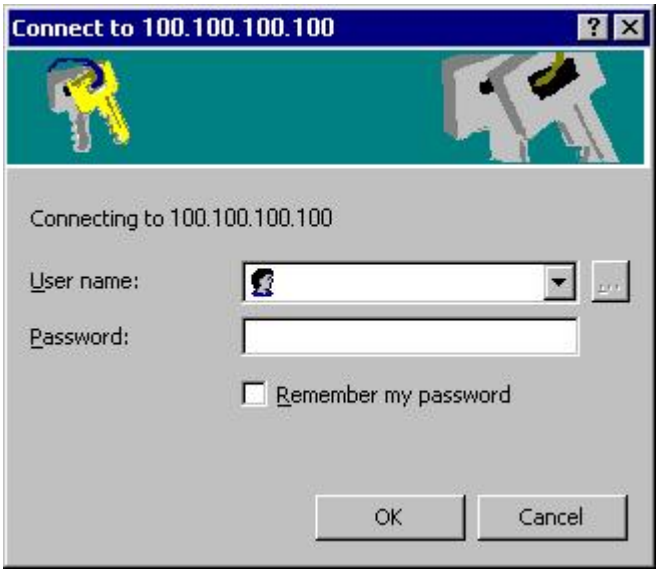
See Installing a User Certificate

Generating a Root CA Certificate

The easiest way to get the root CA certificate is to use a browser on a PC to navigate to the Certificate Authority. To request the root CA certificate, open a browser to

http://<CA IP address>/certsrv.

Sign into the CA with any valid username and password.



Logon to Certificate Authority

Click the **Download a CA certificate, certificate chain or CRL** link.

Make sure the correct root CA certificate is selected in the list box.

Click the **DER** button.

To download the CA certificate, click on the **Download CA certificate** link.

File Download - Security Warning
Do you want to open or save this file?
Name: certnew.cer
Type: Security Certificate, 1.10 KB
From: 100.100.100.100
Open
Save
Cancel
While files from the Internet can be useful, this file type can potentially harm your computer. If you do not trust the source, do not open or save this software. What's the risk?

Download CA Certificate Screen

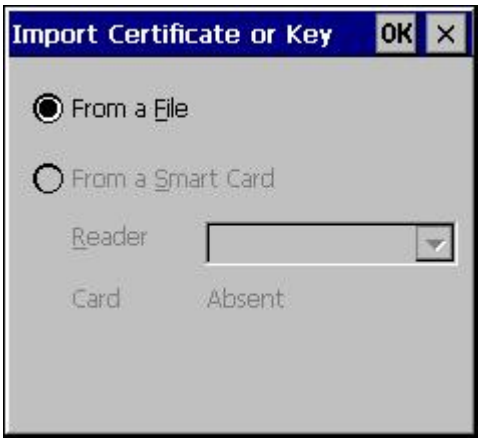
Click the **Save** button and save the certificate. Make sure to keep track of the name and location of the certificate.

Installing a Root CA Certificate

Note: This section is only if the Windows certificate store is used. If the certificate store is not used, copy the certificate to the \System folder or other path specified in the Summit Certs global parameter.

Copy the certificate file to the MX8. Import the certificate by navigating to **Start | Control Panel | Certificates**.

Tap the **Import** button.



Import Certificate

Make sure **From a File** is selected and tap **OK**.

Using the explorer buttons, browse to the location where you copied the certificate, select the certificate desired and tap **OK**.

Tap **Yes** to import the certificate.

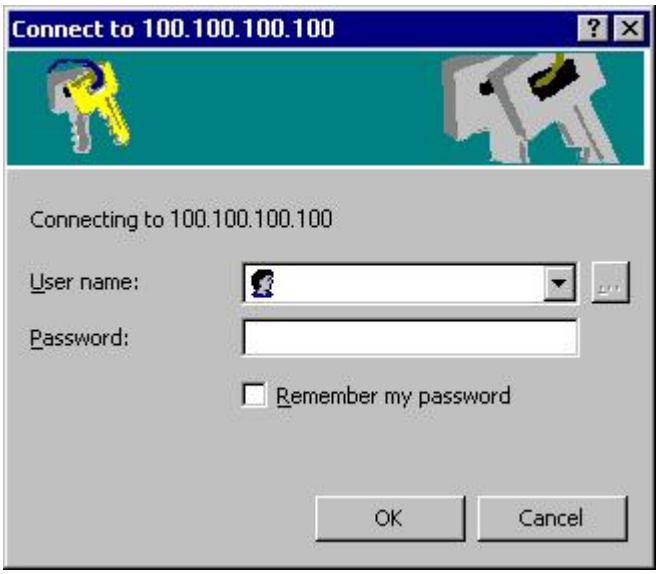
Once the certificate is installed, return to the proper authentication section, earlier in this manual.

Generating a User Certificate

The easiest way to get the user certificate is to use a browser on a PC to navigate to the Certificate Authority. To request the user certificate, open a browser to

http://<CA IP address>/certsrv.

Sign into the CA with the username and password of the person who will be logging into the mobile device.

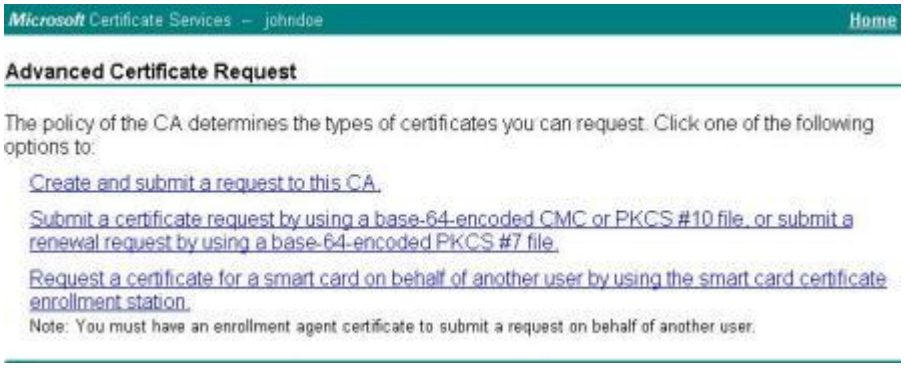


Logon to Certificate Authority

This process saves a user certificate and a separate private key file. Windows CE equipped devices such as the device require the private key to be saved as a separate file rather than including the private key in the user certificate.

Click the **Request a certificate** link.

Click on the **advanced certificate request** link.


Microsoft Certificate Services -- johndoe
Home
Advanced Certificate Request
The policy of the CA determines the types of certificates you can request. Click one of the following options to:
Create and submit a request to this CA.
Submit a certificate request by using a base-64-encoded CMC or PKCS #10 file, or submit a renewal request by using a base-64-encoded PKCS #7 file.
Request a certificate for a smart card on behalf of another user by using the smart card certificate enrollment station.
Note: You must have an enrollment agent certificate to submit a request on behalf of another user.

Advanced Certificate Request Screen

Click on the **Create and submit a request to this CA** link.

For the **Certificate Template**, select **User**.

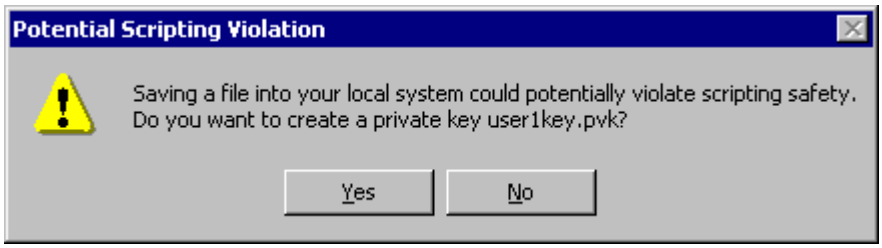
Check the **Mark keys as exportable** and the **Export keys to file** checkboxes.

Type the full path on the local PC where the private key is to be copied. Also specify the private key filename.

Be sure to note the name used for the private key file, for example LXEUSER.PVK. The certificate file created later in this process must be given the same name, for example, LXEUSER.CER.

DO NOT check to use strong private key protection.

Make any other desired changes and click the **Submit** button.


Potential Scripting Violation
Saving a file into your local system could potentially violate scripting safety.
Do you want to create a private key user1key.pvk?
Yes
No

Script Warnings

If any script notifications occur, click the "**Yes** button to continue the certificate request.

Private Key Password

When prompted for the private key password:

- Click **None** if you do not wish to use a password, or
- Enter and confirm your desired password then click **OK**.

Click the **Download certificate** link.

File Download
Some files can harm your computer. If the file information below looks suspicious, or you do not fully trust the source, do not open or save this file.
File name: certnew.cer
File type: Security Certificate
From: 100.100.100.100
This type of file could harm your computer if it contains malicious code.
Would you like to open the file or save it to your computer?
Open
Save
Cancel
More Info
Always ask before opening this type of file

Download Security Warning

Click **Save** to download and store the user certificate to the PC. Make sure to keep track of the name and location of the certificate. The private key file is also downloaded and saved during this process.

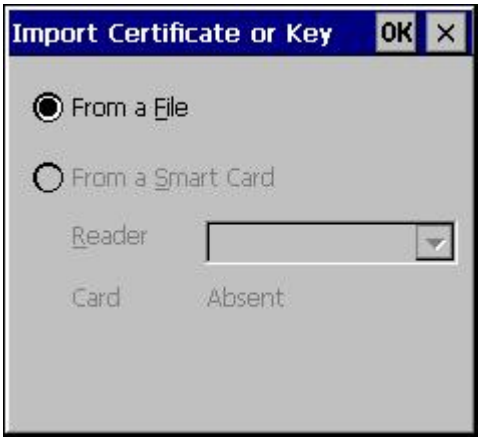
Be sure use the same name for the certificate file as was used for the private key file. For example, it the private key was saved as LXEUSER.PVK then the certificate file created must be given the same name, for example, LXEUSER.CER.

Installing a User Certificate

Copy the certificate and private key files to the MX8. Import the certificate by navigating to **Start | Control Panel | Certificates**.

Select **My Certificates** from the pull down list.

Tap the **Import** button.



Import Certificate

Make sure **From a File** is selected and tap **OK**.

Using the explorer buttons, browse to the location where you copied the certificate, select the certificate desired and tap **OK**.

The certificate is now shown in the list.

With the certificate you just imported highlighted, tap **View**.

From the Field pull down menu, select **Private Key**.

Private Key Not Present

- If the private key is present, the process is complete.
- If the private key is not present, import the private key.

To import the private key, tap **OK** to return to the Certificates screen.

Tap import.

Using the explorer buttons, browse to the location where you copied the private key file, change the Type pull down list to **Private Keys**, select the certificate desired and tap **OK**. Enter the password for the certificate if appropriate.

Tap on **View** to see the certificate details again.

Private Key Present

The private key should now say present. If it does not, there is a problem. Possible items to check:

- Make sure the certificate was generated with a separate private key file, as shown earlier in this section. If the certificate was not generated with a separate private key file, generate a new certificate and follow the import process again.
- Make sure the certificate and private key file have the same name, for example LXEuser.cer for the certificate and LXEuser.pvk for the private key file. If the file names are not the same, rename the private key file and import it again.

Keymaps

Remember : “Sticky” keys are also known as “second” function keys. Ctrl, Alt, Shft, Blue and Orange keys are “sticky keys”. Sticky keys do not need to be held down before pressing the next (or desired) key. It is valid to use combined modifiers on specific keys.

The key mapping in this section relates to the physical keypad. See the Input Panel for the Virtual (or Soft) Keypad used with the stylus.

32 key Numeric-Alpha Keymap

- The following keymap is used on an MX8 that is NOT running an LXE Terminal Emulator. LXE terminal emulators use a separate keymap.
- When using a sequence of keys that require an alpha key, first press the Alph key. Use the Shft sticky key or the Caps key sequence (Blue+Tab) for upper case alphabetic characters.
- Pressing the Alph key forces “Alpha” mode for the 2,3,4,5,6,7,8, and 9 keys. The 1 and 0 keys continue to place a 1 and 0 into the text field.
- To create a combination of numbers and letters before pressing Enter, remember to tap the Alph key to toggle between Alpha and Numeric mode.
- When using a sequence of keys that do not include the Alph key but does include a sticky key, press the sticky key first then the rest of the key sequence.
- Pressing the Power key when in any sticky mode (Blue, Orange, Shift, etc) either turns the device On (when Off) or places it in Suspend (when On).
- For those keymaps that require remapping (MAP), keys can be remapped using the Mappable Keys Control Panel (Start | Settings | Control Panel | Mappable Keys).

To get this Key / Function	Press these Keys in this Order		
Power / Suspend	Power		
Field Exit (default is VK_PAUSE) MAP = Mappable	Blue (MAP)	Shft (MAP)	Diamond #1
=	Orange	Shft (MAP)	Diamond#2 Default is Mappable
(	Blue	Shft (MAP)	Diamond#2 Default is Mappable
!	Orange	Shft (MAP)	Diamond#3 Default is Mappable
)	Blue	Shft (MAP)	Diamond#3 Default is Mappable
Volume Adjust Mode	Orange	Scan	Up Arrow Down Arrow
Display Backlight Brightness Adjust Mode	Blue	Scan	Up Arrow Down Arrow

To get this Key / Function	Press these Keys in this Order		
Toggle Alpha Mode	Alph		
Toggle Blue Mode	Blue		
Toggle Orange Mode	Orange		
Toggle Shift Mode	Shft		
Alt Mode	Alt		
Control Mode	Ctrl		
Esc	Blue	Alt	
Space	Spc		
Enter	Enter		
Scan Mode	Scan		
CapsLock (Toggle)	Blue	Tab	
Back Space	Orange	Spc	
Tab	Tab		
Back Tab	Orange	Tab	
Up Arrow	Up Arrow		
Down Arrow	Down Arrow		
Right Arrow	Blue	Up Arrow	
Left Arrow	Blue	Down Arrow	
Insert	Orange	Ctrl	
Delete	Del		
Home	Shft	Down Arrow	
End	Shft	Up Arrow	
Page Up	Orange	Up Arrow	
Page Down	Orange	Down Arrow	
F1	F1		
F2	F2		
F3	F3		
F4	F4		
F5	F5		
F6	Orange	F1	
F7	Orange	F2	
F8	Orange	F3	
F9	Orange	F4	
F10	Orange	F5	

To get this Key / Function	Press these Keys in this Order		
F11	Blue	F1	
F12	Blue	F2	
F13	Blue	F3	
F14	Blue	F4	
F15	Blue	F5	
F16	Shft	F1	
F17	Shft	F2	
F18	Shft	F3	
F19	Shft	F4	
F20	Shft	F5	
F21	Shft	Orange	F1
F22	Shft	Orange	F2
F23	Shft	Orange	F3
F24	Shft	Orange	F4
a	Alpha	2	
b	Alpha	22	
c	Alpha	222	
d	Alpha	3	
e	Alpha	33	
f	Alpha	333	
g	Alpha	4	
h	Alpha	44	
i	Alpha	444	
j	Alpha	5	
k	Alpha	55	
l	Alpha	555	
m	Alpha	6	
n	Alpha	66	
o	Alpha	666	
p	Alpha	7	
q	Alpha	77	
r	Alpha	777	
s	Alpha	7777	
t	Alpha	8	

To get this Key / Function	Press these Keys in this Order		
u	Alpha	88	
v	Alpha	888	
w	Alpha	9	
x	Alpha	99	
y	Alpha	999	
z	Alpha	9999	
A	Shft	Alpha	2
B	Shft	Alpha	22
C	Shft	Alpha	222
D	Shft	Alpha	3
E	Shft	Alpha	33
F	Shft	Alpha	333
G	Shft	Alpha	4
H	Shft	Alpha	44
I	Shft	Alpha	444
J	Shft	Alpha	5
K	Shft	Alpha	55
L	Shft	Alpha	555
M	Shft	Alpha	6
N	Shft	Alpha	66
O	Shft	Alpha	666
P	Shft	Alpha	7
Q	Shft	Alpha	77
R	Shft	Alpha	777
S	Shft	Alpha	7777
T	Shft	Alpha	8
U	Shft	Alpha	88
V	Shft	Alpha	888
W	Shft	Alpha	9
X	Shft	Alpha	99
Y	Shft	Alpha	999
Z	Shft	Alpha	9999
1	1		
2	2		

To get this Key / Function	Press these Keys in this Order		
3	3		
4	4		
5	5		
6	6		
7	7		
8	8		
9	9		
0	0		
. (period)	Orange	DEL	
<	Blue	7	
[	Blue	2	
[	Orange	2	
]	Blue	3	
]	Orange	3	
>	Blue	8	
=	Orange	Diamond#2	
{	Blue	4	
}	Blue	5	
/	Blue	1	
-	Blue	Spc	
+	Blue	Del	
* (asterisk)	Orange	Diamond#1	
* (asterisk)	Shft	8	
: (colon)	Orange	0 (zero)	
; (semicolon)	Blue	0 (zero)	
?	Orange	8	
` (accent)	Blue	6	
_ (underscore)	Orange	7	
, (comma)	Orange	6	
' (apostrophe)	Orange	Alph	
~ (tilde)	Blue	9	
\	Orange	1	
|	Orange	Alt	
"	Blue	Alph	

To get this Key / Function	Press these Keys in this Order		
!	Orange	Diamond#3	
!	Shft	1	
@	Orange	5	
@	Shft	2	
#	Orange	4	
#	Shft	3	
$	Orange	9	
$	Shft	4	
%	Shft	5	
^	Blue	Ctrl	
^	Shft	6	
&	Shft	7	
(	Blue	Diamond#2	
(	Shft	9	
)	Blue	Diamond#3	
)	Shft	0 (zero)	

32 key Alpha-Mode Keymap

- The following keymap is used on an MX8 that is NOT running an LXE Terminal Emulator. LXE terminal emulators use a separate keymap.
- When using a sequence of keys that require an alpha key, first press the Alph key. Use the Shft sticky key for upper case alphabetic characters.
- Tapping the Power key when in any sticky mode (Blue, Orange, Shift, etc) either turns the device On (when Off) or places it in Suspend (when active).
- Pressing the Alph key locks the keypad into alpha mode. Pressing Alph a second time toggles alpha mode off.
- To create a combination of numbers and letters before pressing Enter, remember to tap the Alph key to toggle between Alpha and Numeric mode.
- Since letters are mapped to Alt, Ctl, Shft, these modifiers must be pressed before Alph. For example, for Alt T, press Alt, then Alph, then Alt again.
- When using a sequence of keys that do not include the Alph key but does include a sticky key, press the sticky key first then the rest of the key sequence.
- For those keymaps that require remapping (MAP), keys can be remapped using the Mappable Keys Control Panel (Start | Settings | Control Panel | Mappable Keys).

To get this Key / Function	Press these Keys in this Order		
Power / Suspend	Power		
Field Exit (default is VK_PAUSE) MAP = Mappable	Blue (MAP)	Shft (MAP)	Diamond #1
=	Orange	Shft (MAP)	Diamond#2 Default is Mappable
(	Blue	Shft (MAP)	Diamond#2 Default is Mappable
!	Orange	Shft (MAP)	Diamond#3 Default is Mappable
)	Blue	Shft (MAP)	Diamond#3 Default is Mappable
Volume Adjust Mode	Orange	Scan	Up Arrow Down Arrow
Display Backlight Brightness Adjust Mode	Blue	Scan	Up Arrow Down Arrow
Toggle Alpha Mode	Alph		
Toggle Blue Mode	Blue		
Toggle Orange Mode	Orange		
Toggle Shift Mode	Shft		
Alt Mode	Alt		
Control Mode	Ctrl		

To get this Key / Function	Press these Keys in this Order		
Esc	Blue	Alt	
Space	Spc		
Enter	Enter		
Scan Mode	Scan		
CapsLock (Toggle)	Blue	Shft	
Uppercase Alpha	Shft		
Back Space	Orange	Spc	
Tab	Tab		
Back Tab	Orange	Tab	
Up Arrow	Up Arrow		
Down Arrow	Down Arrow		
Right Arrow	Blue	Up Arrow	
Left Arrow	Blue	Down Arrow	
Insert	Orange	Ctrl	
Delete	Del		
Home	Shft	Down Arrow	
End	Shft	Up Arrow	
Page Up	Orange	Up Arrow	
Page Up	Orange	8	
Page Down	Orange	7	
Page Down	Orange	Down Arrow	
F1	F1		
F2	F2		
F3	F3		
F4	F4		
F5	F5		
F6	Orange	F1	
F7	Orange	F2	
F8	Orange	F3	
F9	Orange	F4	
F10	Orange	F5	
F11	Blue	F1	
F11	Blue	1	
F12	Blue	F2	

To get this Key / Function	Press these Keys in this Order		
F12	Blue	2	
F13	Blue	F3	
F13	Blue	3	
F14	Blue	F4	
F14	Blue	4	
F15	Blue	F5	
F15	Blue	5	
F16	Shft	F1	
F17	Shft	F2	
F18	Shft	F3	
F19	Shft	F4	
F20	Shft	F5	
F21	Shft	Orange	F1
F22	Shft	Orange	F2
F23	Shft	Orange	F3
F24	Shft	Orange	F4
a	Alpha	F3	
b	Alpha	F4	
c	Alpha	F2	
d	Alpha	F5	
e	Alpha	F1	
f	Alpha	Diamond 1	
g	Alpha	Down Arrow	
h	Alpha	Up Arrow	
i	Alpha	Tab	
j	Alpha	Shft	
k	Alpha	1	
l	Alpha	2	
m	Alpha	3	
n	Alpha	4	
o	Alpha	5	
p	Alpha	6	
q	Alpha	7	
r	Alpha	8	

To get this Key / Function	Press these Keys in this Order		
s	Alpha	9	
t	Alpha	Alt	
u	Alpha	0 (zero)	
v	Alpha	Spc	
w	Alpha	Ctl	
x	Alpha	Del	
y	Alpha	Diamond 2	
z	Alpha	Diamond 3	
A	Shft	Alpha	F3
B	Shft	Alpha	F4
C	Shft	Alpha	F2
D	Shft	Alpha	F5
E	Shft	Alpha	F1
F	Shft	Alpha	Diamond 1
G	Shft	Alpha	Down Arrow
H	Shft	Alpha	Up Arrow
I	Shft	Alpha	Tab
J	Shft	Alpha	Shft
K	Shft	Alpha	1
L	Shft	Alpha	2
M	Shft	Alpha	3
N	Shft	Alpha	4
O	Shft	Alpha	5
P	Shft	Alpha	6
Q	Shft	Alpha	7
R	Shft	Alpha	8
S	Shft	Alpha	9
T	Shft	Alpha	Alt
U	Shft	Alpha	0 (zero)
V	Shft	Alpha	Spc
W	Shft	Alpha	Ctl
X	Shft	Alpha	Del
Y	Shft	Alpha	Diamond 2
Z	Shft	Alpha	Diamond 3

To get this Key / Function	Press these Keys in this Order		
1	1		
2	2		
3	3		
4	4		
5	5		
6	6		
7	7		
8	8		
9	9		
0	0 (zero)		
. (period)	Orange	Diamond 3	
<	Blue	7	
[	Blue	2	
]	Orange	3	
>	Blue	8	
=	Orange	Del	
{	Orange	4	
}	Orange	5	
/	Orange	Alph	
-	Orange	Spc	
+	Orange	9	
* (asterisk)	Orange	0 (zero)	
* (asterisk)	Shft	8	
: (colon)	Blue	Diamond 3	
; (semicolon)	Blue	0 (zero)	
?	Orange	Diamond 1	
` (accent)	Blue	6	
_ (underscore)	Blue	Diamond 2	
, (comma)	Orange	Diamond 2	
' (apostrophe)	Orange	1	
~ (tilde)	Blue	9	
\	Blue	Diamond 1	
|	Orange	Alt	
"	Blue	Alph	

To get this Key / Function	Press these Keys in this Order		
!	Shft	1	
@	Shft	2	
#	Shft	3	
$	Shft	4	
%	Shft	5	
^	Shft	6	
&	Shft	7	
(	Shft	9	
)	Shft	0 (zero)	

Technical Specifications

MX8

Processor	Intel Xscale CPU operating at 520 MHz. Turbo mode switching is supported. 32 bit CPU (with on-chip cache)
Memory	128 MB SDRAM | 128 MB Strata Flash | 20 MB available for programs and data
Mass Storage	Removable Mini SD Card.128MB
Operating System	Microsoft Windows CE 5.0
Radio Modules	802.11 a/b/g radio / Bluetooth
Scanner options	Integrated. No Scanner | Intermec EV-15 Linear Imager | HHP 5380 SF 2D Imager | Symbol SE824 Short Range | Symbol SE1524ER Lorax | Symbol SE955 Short Range (SE824 replaced by SE955 in July 2006)
Display technology	Transmissive Color LCD with Touchscreen. Customer Configurable Display. LED Backlighting Type - LCD – Active Transmissive Color / LED Backlight Resolution - 320 (Vertical) x 240 (Horizontal) pixels Size - 1/4 VGA portrait Diagonal Viewing Area - 2.8 in (7.12cm) Dot Pitch - 60 (W)um X 180 (H) um Dot Size - 180 um X 180 um Color Scale - 256 colors
External Connectors / Interface	RS-232 COM1 mini D serial port. 20 Pin “D” (female) Connector. Provides cabled connection to external devices such as an audio headset, USB/power connection, RS-232/power connection.
Main Battery	Li-Ion battery pack 3.7V 2.3000mAh.In-Unit and External Re-Chargeable
Backup Battery (CMOS)	Internal Nickel Metal Hydride (Ni-MH) 2.4V max. Automatically charges from main battery during normal operation. Requires AC power for re-charging. Memory operational for 5 minutes when main battery is depleted. Minimum life expectancy is 2 years.

Dimensions and Weight

Dimension	
Length	7.58” | 19.2 cm
Width at Display Width at handgrip	2.84” | 7.2 cm 2.45” | 6.2 cm
Depth at Scanner Depth at Battery	1.72” | 4.36.1 cm 1.52” | 3.86 cm
Weight	
Unit with network card, battery, SE955 scanner and handle	1 lbs | 458g
Unit with network card, battery, SE1524ER scanner and handstrap	0.84 lbs | 385g
Battery	2.8 oz | 80g
Network Card	0.35 oz | 9.9g
Mini SD Flash Card	0.035 oz | 1g

Environmental Specifications

Operating Temperature	14°F to 122°F (-10°C to 50°C)
Storage Temperature	-4°F to 158°F (-20°C to 70°C)
ESD	8 KV air, 4kV direct contact
Operating Humidity	Up to 90% non-condensing at 104°F (40°C)
Water and Dust	IEC 60529 compliant to IP54
Vibration	Based on MIL Std 810D

Network Card Specifications

Summit 802.11 b/g

Bus Interface	16-bit Compact Flash Type I with 50-pin connector
Wireless Frequencies	2.4 to 2.4897 GHz
RF Data Rates	1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, 54 Mbps
RF Power Level	50 mW max.
Channels	1-11 FCC, 1-13 ETSI
Operating Temperature	Same as MX8 Operating Temperature
Storage Temperature	Same as MX8 Storage Temperature
Connectivity	TCP/IP, Ethernet, ODI
Diversity	Yes

Summit 802.11a/b/g

Bus Interface	16-bit Compact Flash Type I with 50-pin connector
Wireless Frequencies	2.4 to 2.4897 GHz IEEE 802.11b / 802.11g DSSS OFDM 5.0GHz IEEE 802.11a DSSS OFDM
RF Data Rates	1, 2, 5.5, 6, 9, 11, 12, 18, 24, 36, 48, 54 Mbps
RF Power Level	64 mW (18dBm)
Channels	1-11 FCC, 1-13 ETSI
Operating Temperature	Same as MX8 Operating Temperature
Storage Temperature	Same as MX8 Storage Temperature
Connectivity	TCP/IP, Ethernet, ODI
Diversity	Yes

Bluetooth

Enhanced Data Rate	Up to 3.0 Mbit/s over the air
Connection	No less than 32.80 feet (10 meters) line of sight
Operating Frequency	2.402 – 2.480 GHz
Bluetooth Version	2.0 + EDR

AppLock Error Messages

Any messages whose first word is an 'ing' word is output prior to the action described in the message. For example, "Switching to admin-hotkey press" is logged after the administrator has pressed the hotkey but prior to starting the switch process.

For all operations that can result in an error, an Error level message is displayed when a failure occurs. These messages contain the word "failure". These messages have a partner Extended level message that is logged which contains the word "OK" if the action completed successfully rather than with an error.

For processing level messages, "Enter…" is logged at the beginning of the function specified in the message and "Exit…" is logged at the end (just before the return) of the function specified in the message.

Message	Explanation and/or corrective action	Level
Error reading hotkey	The hotkey is read but not required by AppLock.	LOG_EX
Error reading hotkey; using default	A hotkey is required. If there is a failure reading the hotkey, the internal factory default is used.	LOG_ERROR
App Command Line= <Command line>	Command line of the application being locked	LOG_ PROCESSING
App= <Application name>	Name of the application being locked	LOG_ PROCESSING
dwProcessID= <#>	Device ID of the application being locked	LOG_EX
Encrypt exported key len <#>	Size of encrypt export key	LOG_EX
Encrypt password length= <#>	The length of the encrypted password.	LOG_EX
Encrypted data len <#>	Length of the encrypted password	LOG_EX
hProcess= <#>	Handle of the application being locked	LOG_EX
Key pressed = <#>	A key has been pressed and trapped by the hotkey processing.	LOG_EX
**********	The status information is being saved to a file and the file has been opened successfully.	LOG_EX
Address of keyboard hook procedure failure	AppLock found the kbdhook.dll, but was unable to get the address of the initialization procedure. For some reason the dll is corrupted. Look in the \Windows directory for kbdhook.dll. If it exists, delete it. Also delete AppLock.exe from the \Windows directory and reboot the unit. Deleting AppLock.exe triggers the AppLock system to reload.	LOG_ERROR
Address of keyboard hook procedure OK	AppLock successfully retrieved the address of the keyboard filter initialization procedure.	LOG_EX
Alt pressed	The Alt key has been pressed and trapped by the HotKey processing.	LOG_EX
Alt	Processing the hotkey and backdoor entry	LOG_EX
Application handle search failure	The application being locked did not complete initialization.	LOG_ERROR
Application handle search OK	The application initialized itself successfully	LOG_ERROR
Application load failure	The application could not be launched by AppLock; the application could not be found or is corrupted.	LOG_ERROR
Backdoor message received	The backdoor keys have been pressed. The backdoor hotkeys provide a method for customer service to get a user back into their system without editing the registry or reloading the device.	LOG_ PROCESSING

Message	Explanation and/or corrective action	Level
Cannot find kbdhook.dll	The load of the keyboard filter failed. This occurs when the dll is missing or is corrupted. Look in the \Windows directory for kbdhook.dll. If it exists, delete it. Also delete AppLock.exe from the \Windows directory and reboot the unit. Deleting AppLock.exe triggers the AppLock system to reload.	LOG_ERROR
Converted Pwd	Converted password from wide to mbs.	LOG_EX
Could not create event EVT_HOTKEYCHG	The keyboard filter uses this event at the Administrator Control panel. The event could not be created.	LOG_ERROR
Could not hook keyboard	If the keyboard cannot be controlled, AppLock cannot process the hotkey. This failure prevents a mode switch into user mode.	LOG_ERROR
Could not start thread HotKeyMon	The keyboard filter must watch for hot key changes. The watch process could not be initiated.	LOG_ERROR
Ctrl after L or X	Processing the backdoor entry.	LOG_EX
Ctrl pressed	The Ctrl key has been pressed and trapped by the HotKey processing.	LOG_EX
Ctrl	Processing the hotkey and backdoor entry.	LOG_EX
Decrypt acquire context failure	Unable to decrypt password.	LOG_ERROR
Decrypt acquired context OK	Decryption process ok.	LOG_EX
Decrypt create hash failure	Unable to decrypt password.	LOG_ERROR
Decrypt created hash OK	Decryption process ok.	LOG_EX
Decrypt failure	Unable to decrypt password.	LOG_ERROR
Decrypt import key failure	Unable to decrypt password.	LOG_ERROR
Decrypt imported key OK	Decryption process ok.	LOG_EX
Encrypt acquire context failure	Unable to encrypt password.	LOG_ERROR
Encrypt acquire encrypt context failure	Unable to encrypt password.	LOG_ERROR
Encrypt acquired encrypt context OK	Encrypt password process successful.	LOG_EX
Encrypt create hash failure	Unable to encrypt password.	LOG_ERROR
Encrypt create key failure	Unable to encrypt password.	LOG_ERROR
Encrypt created encrypt hash OK	Encrypt password process successful.	LOG_EX
Encrypt export key failure	Unable to encrypt password.	LOG_ERROR
Encrypt export key length failure	Unable to encrypt password.	LOG_ERROR
Encrypt exported key OK	Encrypt password process successful.	LOG_EX
Encrypt failure	The password encryption failed.	LOG_ERROR
Encrypt gen key failure	Unable to encrypt password.	LOG_ERROR
Encrypt generate key failure	Unable to encrypt password.	LOG_ERROR

Message	Explanation and/or corrective action	Level
Encrypt get user key failure	Unable to encrypt password.	LOG_ERROR
Encrypt get user key ok	Encrypt password process successful.	LOG_EX
Encrypt hash data failure	Unable to encrypt password.	LOG_ERROR
Encrypt hash data from pwd OK	Encrypt password process successful.	LOG_EX
Encrypt length failure	Unable to encrypt password.	LOG_ERROR
Encrypt out of memory for key	Unable to encrypt password.	LOG_ERROR
Encrypted data OK	The password has been successfully encrypted.	LOG_EX
Enter AppLockEnumWindows	In order for AppLock to control the application being locked so it can prevent the application from exiting, AppLock launches the application and has to wait until it has created and initialized its main window. This message is logged when the function that waits for the application initialization is entered.	LOG_EX
Enter DecryptPwd	Entering the password decryption process.	LOG_ PROCESSING
Enter EncryptPwd	Entering the password encryption processing.	LOG_ PROCESSING
Enter FullScreenMode	Entering the function that switches the screen mode. In full screen mode, the taskbar is hidden and disabled.	LOG_ PROCESSING
Enter GetAppInfo	Processing is at the beginning of the function that retrieves the application information from the registry.	LOG_ PROCESSING
Enter password dialog	Entering the password dialog processing.	LOG_ PROCESSING
Enter password timeout	Entering the password timeout processing.	LOG_ PROCESSING
Enter restart app timer	Some application shut down before AppLock can stop it. In these cases, AppLock gets notification of the exit. When the notification is received, AppLock starts a timer to restart the application. This message logs that the timer has expired and the processing is at the beginning of the timer function.	LOG_ PROCESSING
Enter TaskbarScreenMode	Entering the function that switches the screen to non-full screen mode and enable the taskbar.	LOG_ PROCESSING
Enter ToAdmin	Entering the function that handles a mode switch into admin mode.	LOG_ PROCESSING
Enter ToUser	Entering the function that handles the mode switch to user mode	LOG_ PROCESSING
Enter verify password	Entering the password verification processing.	LOG_ PROCESSING
Exit AppLockEnumWindows-Found	There are two exit paths from the enumeration function. This message denotes the enumeration function found the application.	LOG_ PROCESSING
Exit AppLockEnumWindows-Not found	There are two exit paths from the enumeration function. This message denotes the enumeration function did not find the application.	LOG_ PROCESSING
Exit DecryptPwd	Exiting password decryption processing.	LOG_

Message	Explanation and/or corrective action	Level
		PROCESSING
Exit EncryptPwd	Exiting password encryption processing.	LOG_ PROCESSING
Exit FullScreenMode	Exiting the function that switches the screen to full screen.	LOG_ PROCESSING
Exit GetAppInfo	Processing is at the end of the function that retrieved the application information from the registry.	LOG_ PROCESSING
Exit password dialog	Exiting password prompt processing.	LOG_ PROCESSING
Exit password dialog-cancel	Exiting password prompt w/cancel.	LOG_ PROCESSING
Exit password dialog-OK	Exiting password prompt successfully.	LOG_ PROCESSING
Exit password timeout	Exiting password timeout processing.	LOG_ PROCESSING
Exit restart app timer	Processing is at the end of the timer function	LOG_ PROCESSING
Exit TaskbarScreenMode	Exiting the function that switches the screen mode back to normal operation for the administrator.	LOG_ PROCESSING
Exit ToAdmin	Exiting the function that handles the mode switch into admin mode.	LOG_ PROCESSING
Exit ToUser	Exiting the user mode switch function.	LOG_ PROCESSING
Exit ToUser-Registry read failure	The AppName value does not exist in the registry so user mode cannot be entered.	LOG_ PROCESSING
Exit verify password-no pwd set	Exiting password verification.	LOG_ PROCESSING
Exit verify password-response from dialog	Exiting password verification.	LOG_ PROCESSING
Found taskbar	The handle to the taskbar has been found so that AppLock can disable it in user mode.	LOG_ PROCESSING
Getting address of keyboard hook init procedure	AppLock is retrieving the address of the keyboard hook.	LOG_ PROCESSING
Getting configuration from registry	The AppLock configuration is being read from the registry. This occurs at initialization and also at entry into user mode. The registry must be re-read at entry into user mode in case the administration changed the settings of the application being controlled.	LOG_ PROCESSING
Getting encrypt pwd length	The length of the encrypted password is being calculated.	LOG_EX
Hook wndproc failure	AppLock is unable to lock the application. This could happen if the application being locked encountered an error after performing its initialization and shut itself down prior to being locked by AppLock.	LOG_ERROR
Hook wndproc of open app failure	The application is open, but AppLock cannot lock it.	LOG_ERROR
Hot key event creation failure	The Admin applet is unable to create the hotkey notification.	LOG_ERROR

Message	Explanation and/or corrective action	Level
Hot key pressed	Processing the hotkey and backdoor entry	LOG_EX
Hot key pressed	Processing the hotkey and backdoor entry	LOG_EX
Hot key set event failure	When the administrator changes the hotkey configuration the hotkey controller must be notified. This notification failed.	LOG_ERROR
Hotkey press message received	The user just pressed the configured hotkey.	LOG_ PROCESSING
In app hook:WM_SIZE	In addition to preventing the locked application from exiting, AppLock must also prevent the application from enabling the taskbar and resizing the application's window. This message traps a change in the window size and corrects it.	LOG_EX
In app hook:WM_ WINDOWPOSCHANGED	In addition to preventing the locked application from exiting, AppLock must also prevent the application from enabling the taskbar and resizing the application's window. This message traps a change in the window position and corrects it.	LOG_EX
Initializing keyboard hook procedure	AppLock is calling the keyboard hook initialization.	LOG_ PROCESSING
Keyboard hook initialization failure	The keyboard filter initialization failed.	LOG_ERROR
Keyboard hook loaded OK	The keyboard hook dll exists and loaded successfully.	LOG_EX
L after Ctrl	Processing the backdoor entry.	LOG_EX
Loading keyboard hook	When AppLock first loads, it loads a dll that contains the keyboard hook processing. This message is logged prior to the load attempt.	LOG_ PROCESSING
Open failure	The status information is being saved to a file and the file open has failed. This could occur if the file is write protected. If the file does not exist, it is created.	LOG_ERROR
Open registry failure	If the Administration registry key does not exist, the switch to user mode fails because the AppName value in the Administration key is not available.	LOG_ERROR
Opened status file	The status information is being saved to a file and the file has been opened successfully.	LOG_EX
Out of memory for encrypted pwd	Not enough memory to encrypt the password.	LOG_ERROR
pRealTaskbarWndProc already set	The taskbar control has already been installed.	LOG_EX
Pwd cancelled or invalid-remain in user mode	The password prompt was cancelled by the user or the maximum number of failed attempts to enter a password was exceeded.	LOG_EX
Read registry error-hot key	The hotkey registry entry is missing or empty. This is not considered an error. The keyboard hook uses an embedded default if the value is not set in the registry.	LOG_ERROR
Read registry failure-app name	AppName registry value does not exist or is empty. This constitutes a failure for switching into user mode.	LOG_ERROR
Read registry failure-Cmd Line	AppCommandLine registry entry is missing or empty. This is not considered an error since command line information is not necessary to launch and lock the application.	LOG_ERROR
Read registry failure-Internet	The Internet registry entry is missing or empty. This is not considered an error since the Internet value is not necessary to launch and lock the application.	LOG_ERROR
Registering Backdoor MSG	The AppLock system communicates with the keyboard hook via a user defined message. Both AppLock.exe and Kbdhook.dll register the message at initialization.	LOG_ PROCESSING
Registering Hotkey MSG	The AppLock system communicates with the keyboard hook via a user defined message. Both Applock.exe and Kbdhook.dll register the message at initialization.	LOG_ PROCESSING

Message	Explanation and/or corrective action	Level
Registry read failure at reenter user mode	The registry has to be read when entering user mode is the AppName is missing. This user mode entry is attempted at boot and after a hotkey switch when the administrator has closed the application being locked or has changed the application name or command line.	LOG_ERROR
Registry read failure at reenter user mode	The registry has to be read when switching into user mode. This is because the administrator can change the settings during administration mode. The read of the registry failed which means the Administration key was not found or the AppName value was missing or empty.	LOG_ERROR
Registry read failure	The registry read failed. The registry information read when this message is logged is the application information. It the Administration key cannot be opened or if the AppName value is missing or empty, this error is logged. The other application information is not required. If the AppName value is not available, AppLock cannot switch into user mode.	LOG_ERROR
Reset system work area failure	The system work area is adjusted when in user mode to cover the taskbar area. The system work area has to be adjusted to exclude the taskbar area in administration mode. AppLock was unable to adjust this area.	LOG_ERROR
Shift pressed	The Shift key has been pressed and trapped by the HotKey processing.	LOG_EX
Shift	Processing the hotkey and backdoor entry	LOG_EX
Show taskbar	The taskbar is now being made visible and enabled.	LOG_ PROCESSING
Switching to admin-backdoor	The system is currently in user mode and is now switching to admin mode. The switch occurred because of the backdoor key presses were entered by the administrator.	LOG_ PROCESSING
Switching to admin-hotkey press	The system is currently in user mode and is now switching to admin mode. The switch occurred because of a hotkey press by the administrator.	LOG_ PROCESSING
Switching to admin-kbdhook.dll not found	The keyboard hook load failed, so AppLock switches to admin mode. If a password is specified, the password prompt is displayed and remains until a valid password is entered.	LOG_ PROCESSING
Switching to admin-keyboard hook initialization failure	If the keyboard hook initialization fails, AppLock switches to admin mode. If a password is specified, the password prompt is displayed and remains until a valid password is entered.	LOG_ PROCESSING
Switching to admin-registry read failure	See the explanation of the “Registry read failure” above. AppLock is switching into Admin mode. If a password has been configured, the prompt will be displayed and will not be dismissed until a valid password is entered.	LOG_ PROCESSING
Switching to TaskbarScreenMode	In administration mode, the taskbar is visible and enabled.	LOG_EX
Switching to user mode	The registry was successfully read and AppLock is starting the process to switch to user mode.	LOG_ PROCESSING
Switching to user-hotkey press	The system is currently in admin mode and is now switching to user mode. The switch occurred because of a hotkey press by the administrator.	LOG_ PROCESSING
Taskbar hook failure	AppLock is unable to control the taskbar to prevent the locked application from re-enabling it.	LOG_ERROR
Taskbar hook OK	AppLock successfully installed control of the taskbar.	LOG_EX
Timeout looking for app window	After the application is launched, AppLock must wait until the application has initialized itself before proceeding. The application did not start successfully and AppLock has timed out.	LOG_ERROR
ToUser after admin, not at boot	The user mode switch is attempted when the device boots and after the administrator presses the hotkey. The mode switch is being attempted after a hotkey press.	LOG_EX

Message	Explanation and/or corrective action	Level
ToUser after admin-app still open	The switch to user mode is being made via a hotkey press and the administrator has left the application open and has not made any changes in the configuration.	LOG_EX
ToUser after admin-no app or cmd line change	If user mode is being entered via a hotkey press, the administrator may have left the configured application open. If so, AppLock does not launch the application again unless a new application or command line has been specified; otherwise, it just locks it.	LOG_EX
Unable to move desktop	The desktop is moved when switching into user mode. This prevents them from being visible if the application is exited and restarted by the timer. This error does not affect the screen mode switch; processing continues.	LOG_ERROR
Unable to move taskbar	The taskbar is moved when switching into user mode. This prevents them from being visible if the application is exited and restarted by the timer. This error does not affect the screen mode switch; processing continues.	LOG_ERROR
Unhook taskbar wndproc failure	AppLock could not remove its control of the taskbar. This error does not affect AppLock processing	LOG_ERROR
Unhook wndproc failure	AppLock could not remove the hook that allows monitoring of the application.	LOG_ERROR
Unhooking taskbar	In administration mode, the taskbar should return to normal operation, so AppLock's control of the taskbar should be removed.	LOG_EX
Unhooking wndproc	When the administrator leaves user mode, the device is fully operational; therefore, AppLock must stop monitoring the locked application.	LOG_EX
WM_SIZE adjusted	This message denotes that AppLock has readjusted the window size.	LOG_EX
X after Ctrl+L	Processing the backdoor entry.	LOG_EX
Ret from password <#>	Return value from password dialog.	LOG_EX
Decrypt data len <#>	Length of decrypted password.	LOG_EX
Window handle to enumwindows=%x	The window handle that is passed to the enumeration function. This message can be used by engineering with other development tools to trouble shoot application lock failures.	LOG_EX
WM_WINDOWPOSCHG adjusted=%x	Output the window size after it has been adjusted by AppLock	LOG_EX

Hat Encoding

Hat Encoded Characters Hex 00 through AD

Desired ASCII	Hex Value	Hat Encoded
NUL	0X00	^@
SOH	0X01	^A
STX	0X02	^B
ETX	0X03	^C
EOT	0X04	^D
ENQ	0X05	^E
ACK	0X06	^F
BEL	0X07	^G
BS	0X08	^H
HT	0X09	^I
LF	0X0A	^J
VT	0X0B	^K
FF	0X0C	^L
CR	0X0D	^M
SO	0X0E	^N
SI	0X0F	^O
DLE	0X10	^P
DC1 (XON)	0X11	^Q
DC2	0X12	^R
DC3 (XOFF)	0X13	^S
DC4	0X14	^T
NAK	0X15	^U
SYN	0X16	^V
ETB	0X17	^W
CAN	0X18	^X
EM	0X19	^Y
SUB	0X1A	^Z
ESC	0X1B	^[
FS	0X1C	^\\
GS	0X1D	^]
RS	0X1E	^^
US	0X1F	^ (Underscore)
	0X7F	^?
	80	~^@
	81	~^A
	82	~^B
	83	~^C
IND	84	~^D
NEL	85	~^E
SSA	86	~^F
®	AE	~. (Period)
¯	AF	~/
°	B0	~0 (Zero)
±	B1	~1

Desired ASCII	Hex Value	Hat Encoded
ESA	87	~^G
HTS	88	~^H
HTJ	89	~^I
VTS	8A	~^J
PLD	8B	~^K
PLU	8C	~^L
RI	8D	~^M
SS2	8E	~^N
SS3	8F	~^O
DCS	90	~^P
PU1	91	~^Q
PU2	92	~^R
STS	93	~^S
CCH	94	~^T
MW	95	~^U
SPA	96	~^V
EPA	97	~^W
	98	~^X
	99	~^Y
	9A	~^Z
CSI	9B	~^[
ST	9C	~^\\
OSC	9D	~^]
PM	9E	~^^
APC	9F	~^_ (Underscore)
(no-break space)	A0	~ (Tilde and Space)
¡	A1	~!
¢	A2	~"
£	A3	~#
¤	A4	~$
¥	A5	~%
¦	A6	~&
§	A7	~'
¨	A8	~(
©	A9	~)
ª	AA	~*
«	AB	~+
¬	AC	~,
(soft hyphen)	AD	~- (Dash)
×	D7	~W
Ø	D8	~X
Ù	D9	~Y
Ú	DA	~Z

Hat Encoded Characters Hex AE through FF

Desired ASCII	Hex Value	Hat Encoded
²	B2	~2
³	B3	~3
´	B4	~4
µ	B5	~5
¶	B6	~6
·	B7	~7
¸	B8	~8
¹	B9	~9
º	BA	~:
»	BB	~;
¼	BC	~<
½	BD	~=
¾	BE	~>
¿	BF	~?
À	C0	~@
Á	C1	~A
Â	C2	~B
Ã	C3	~C
Ä	C4	~D
Å	C5	~E
Æ	C6	~F
Ç	C7	~G
È	C8	~H
É	C9	~I
Ê	CA	~J
Ë	CB	~K
Ì	CC	~L
Í	CD	~M
Î	CE	~N
Ï	CF	~O
Ð	D0	~P
Ñ	D1	~Q
Ò	D2	~R
Ó	D3	~S
Ô	D4	~T
Õ	D5	~U
Ö	D6	~V

Desired ASCII	Hex Value	Hat Encoded
Û	DB	~[
Ü	DC	~\\
Ý	DD	~]
Þ	DE	~\^
ß	DF	~_ (Underscore)
à	E0	~`
á	E1	~a
â	E2	~b
ã	E3	~c
ä	E4	~d
å	E5	~e
æ	E6	~f
ç	E7	~g
è	E8	~h
é	E9	~i
ê	EA	~j
ë	EB	~k
ì	EC	~l
í	ED	~m
î	EE	~n
ï	EF	~o
ð	F0	~p
ñ	F1	~q
ò	F2	~r
ó	F3	~s
ô	F4	~t
õ	F5	~u
ö	F6	~v
÷	F7	~w
ø	F8	~x
ù	F9	~y
ú	FA	~z
û	FB	~{
ü	FC	~|
ý	FD	~}
þ	FE	~~
ÿ	FF	~^?

Revision History

Revision / Date	Location	Change
F - Aug 2009		Formatted for browser delivery
G - Oct 2009	1. Cover page and contents 2. Software / Control Panel	1. Applied Marketing Color Scheme 2. Added LXE Scanner Wedge
H - Dec 2009	Control Panel - Administration	Troubleshooting: Removed LXE backdoor key sequence.

Index

A

About ... 49, 51
About LXE ... 49, 52
Accessibility ... 49, 53
ActiveSync ... 42
ActiveSync Introduction ... 35
Adapters ... 155
Adapters Options - Network ... 162
Adapters tab ... 162
Add Prefix ... 137
Add Suffix ... 137
Admin Hotkey
  AppLock ... 56
Admin Login ... 180
Admin Password ... 197
Administration ... 49
Aggressive Scan ... 194
Allow Close ... 67
Antenna
  Diversity
    Receive ... 196
    Transmit ... 195
Aperture ... 5
API calls ... 30
Appearance ... 95
Application Shortcuts ... 162
AppLock ... 162
  End-user mode ... 57
  EUIE ... 59
  Hotkey for Administrator ... 56
  Passwords ... 57
  Setup ... 54
Asian fonts ... 150
Assign ... 131
Auth Server ... 195
Auth Timeout ... 198
Auto-reconnect, Bluetooth ... 89
Auto hide ... 38
Auto Profile ... 181
Automatic reset ... 53
Avalanche Enabler installation ... 28
Avalanche Icon ... 163
Avalanche Network profile ... 163
Avalanche Update Settings ... 155

B

Background ... 95
Backlight ... 96
Backlight setting is synchronized ... 113
backup battery ... 73
Backup Data Files using ActiveSync ... 46
Barcode Data Match Edit Buttons ... 135
Barcode manipulation parameter settings ... 117
Barcode processing ... 118
Barcode Processing Examples ... 129
Batteries ... 20
Battery ... 49, 73
battery gas gauge icon ... 73
Battery State and OS Upgrade ... 174
BG Channel Set ... 193
Bit Rate ... 185
Bluetooth ... 49
  About panel ... 82
Bluetooth Beep and LED Indications ... 89
Bluetooth control panel ... 74
Bluetooth Device ... 75
Bluetooth Device Menu ... 77
Bluetooth Device Properties ... 78
Bluetooth Indicators ... 85
Bluetooth Properties panel ... 78
Bootstrapping the RMU ... 151

C

CAB Files on the Flash Card ... 30

Calibration 141
CCX Features 194
Certificates 49, 90, 218
  Root CA 218
  User 221
Certs 36
Certs Path 198
Character Recognition
  Touchscreen 37
Clear All button 127
Clear Contents of Document Folder 39
Client Name 184
Code IDs 126
Cold Boot and Loss of Host Re-connection 48
COLDBOOT.EXE 30
COM1 49, 91
COM1 Tab 121
Command Line Interface 173
Command Prompt 36
Communication 106
Computer Friendly Name 82
Configuration
  AppLock 60
Configure the Avalanche Enabler 149
Configuring the Profile 204
Connect option 154
Connection 155
Connection tab 156
Contact 158
Continue or Stop Monitoring 166
Continuous Scan Mode 123
Control Char mapping 123
Control Code Replacement 128
Control Panel options 49
Ctrl Char Mapping 130
custom Code IDs 126
Custom identifier 123
Custom Identifiers 126

D

Data stripping 134
Date, Time, Time Zone 92
Date/Time 49
Daylight Savings 92
Default Enabler adapter control settings 149
Default Input Language 101
default Settings password 154
Desktop 31
Device License 147
DFS Channels 194
Diags Tab 190
Dialing 49, 93
Dimensions and Weight 239
Dimmed parameters
  not supported by LXE 152
Discover 76
Discover and Query 76
Display 16, 49, 94, 155, 161
Display Backlight Timer 16
Diversity
  Receive 196
  Transmit 195
Do not monitor or launch Enabler 148, 159
Double Tap 141

E

EAP Type 187
Enable Code ID 124
Enable Code ID drop-down box 122
Enabler
  Uninstall Process 148
Enabler Configuration 153
Enabler installation 28
Enabler installation file 148
Enabler searches for an Mobile Device Server 149
Enabler Settings icon 153
Environmental Specifications 239

Error message
Mobile unit out of resources 150
Error Message
Agent not found 149
Error Messages
AppLock 241
EUIE 59
Execution 155
Execution tab 157
Exit Password 166
Expand Control Panel 39
eXpress Config utility 167
eXpress Scan icon 167

F

Factory Default Settings 119
File Menu Options 154
Frag Thresh 196
FTP Server, start and stop 35

G

Global Parameters 191
Global Tab 191
Good Scan and Bad Scan Sounds 146

H

Help 176
Hide Password 197
High Contrast 53
Hotkey
AppLock 69

I

I/O Port and Cables 3
Icon on taskbar 162
Icons
Explorer, Internet 31
My Computer 31
My Documents 31
Recycle Bin 31
Identifying Software Versions 52
Input Panel 49, 97, 104
Installation and Configuration 147
Installing Packages 151
Installing the Enabler on LXE Devices 148
Internet 98
Internet connectivity 98
Internet Explorer
AppLock 59
Radio card and ISP required 33, 36
Internet Options 49
Introduction
Enabler Install and Configure 147

J

Jacked 73

K

Keyboard 49, 101
Shortcuts 22
Keypads 7
Using the 14

L

Language and Fonts 51
LAUNCH.EXE 28
Leading and Trailing 134
LED 197
Length Based Barcode Stripping 138
Link speed 165
Logging
AppLock 72

M

MAC Address 52
Main Tab 120, 179

Manage
Network Settings 162
Wireless Settings 162
Manage Taskbar 159
manage the taskbar 159
Manual settings properties 163
Manual Settings Properties Panels 164
mappable keys 102
Mappable Keys 49, 102
Match Edit Buttons 135
Match List Rules 136
Media Player 37
Menu Options 155
Start 34
Mixer 49, 103
Mobile Device Server not found 149
Mobile Device Wireless and Network Settings 149
Modes
AppLock 56
Monitor and launch Enabler 159
Monitor for updates 159
Mouse 49, 105
MouseKeys 53
MX8 Options 49

N

Network and Dial Up Options 49
Network and Dialup Options 107
Network Card Specifications 239
No Security 205
Notification 53

O

Output panel 103
Owner 49, 109

P

Password 49, 111
AppLock 57
AppLock Save As 72
Enabler control panel 154
Exit 166
lost at cold boot 30
PC Connection 49, 112
PEAP/GTC 210
Summit Radio 210, 215
PEAP/MSCHAP
Summit Radio 208
Periodic Update 158
Permanent storage of drivers and utilities 30
Ping Delay ms 199
Ping Payload 198
Ping Timeout ms 199
Power 49, 113
Power Modes 18
Power Save 184
power up password 111
Pre-loaded Files 28
Prefix / Suffix 137
PREGEDIT.EXE 29
Preparation 171
Preparing an LXE Device for Remote Management 150
Prerequisites
Enabler Install and Configure 147
Wavelink Avalanche System 147
Procedure 171
Profile 184
Profile Parameters 184
Profile Tab 182
Program Shutdown 159
Prompt
Command 36

R

Radio Mode 186
RAS (Remote Access Services) 108
Reboot before attempt 158
Recalibrate button 141

Reflash ... 171
Reflash the Operating System ... 171
Reflashing and Language Options ... 171
Regional and Language Settings ... 115
Regional Settings ... 50
Registry ... 51-52
Registry content
  back up location ... 30
Registry Editor ... 51-52
REGLOAD.EXE ... 29
Remote Control License ... 147
Remote desktop connection ... 37
Remote Management Utility (RMU) ... 151
  Installation ... 150
Remove button ... 127
Remove Programs ... 50, 116
Require external power ... 158
Reset All ... 170
Reset Registry ... 170
Reset to Default Settings ... 170
Revision History ... 249
RMU.CE.CAB ... 148, 150
RMU.StorageRAM ... 150
RMUCE package ... 151
RMUCEbt package ... 151
Roam Delta ... 192
Roam Period ... 193
Roam Trigger ... 192
Root CA Certificates
  Generating ... 218
  Installing on VX3X ... 220
RTS Thresh ... 196
RX Diversity ... 196

S

Scan Config ... 155, 160
Scan Config option ... 154
Scan Config Option ... 160
Scan Config tab ... 160
Scanner ... 50
screensaver password ... 111
searches for new adapters ... 165
Security Panel
  AppLock ... 69
Security Password
  AppLock ... 69
Server Contact ... 155, 158
Server Contact tab ... 158
Settings ... 79
Settings option ... 154
Setup
  AppLock ... 54
Shortcuts ... 155, 162
Shortcuts panel
  use AppLock ... 162
Shortcuts tab ... 162
Show Clock ... 38
Sign-On vs. Stored Credentials ... 200
signal quality ... 165
signal strength ... 165
Software and Files ... 28
SoundSentry ... 53
Speaker volume decibel level ... 103
SSID ... 184
Start Menu ... 34
Startup Shutdown tab ... 159
Startup/Shutdown ... 155, 159, 166
Status ... 155, 165
Status Display ... 165
Status LEDs ... 16
Status Panel
  AppLock ... 71
Status tab ... 165
Status Tab ... 189
StickyKeys ... 53
Stop Enabler Monitoring ... 148
stylus ... 141
Stylus ... 50, 141
Subsequent Use ... 84

Summit 35, 50
Summit Client Utility 176
Summit Tray Icon 177
Symbologies dialog 132
Symbology settings 123
Symbology Settings 123
Sync button 92
Sync Clock 158
System 50, 142
System Hardware 10
System Idle timer 113

T

Technical Specifications 238
Temperature and Humidity 239
ToggleKeys 53
touchscreen 16
Transcriber 37
Tray Icon 197
Troubleshooting 9
  network and wireless settings 164
  Reflash 174
Turn Off Bluetooth 79
TX Diversity 195
Tx Power 185

U

Update tab" 158
Update Window Display 161
Upgrade System Baseline 151
User Certificates
  Generating 221
  Installing on VX3X 224
User Idle timer 113
User Interface 152
User Interface Language 101
Using eXpress Scan 167
Using Remote Management 166
Using the Scan Feature 183
Utilities 28

V

VersionInfo.EXE 151
Versions 51
Versions, MX8 52
Vibration Tab 140
virtual keyboard 97
Volume & Sounds 145
Volume and Sounds 50

W

WARMBOOT.EXE 30
WAV files 145
Wavelink Avalanche Enabler installation 28
Wavelink Avalanche Mobility Center User's Guide 155
Wavelink Product License 147
WAVPLAY.EXE 30
WEP 206
WiFi 50
Window Display Options 161
Windows Certificate Store vs. Certs Path 202
Windows Explorer 37
Wireless Configuration Application 150
Wireless Configuration Application (WCA) 151
Wordpad 37
WPA-PSK
  Summit Radio 217
WPA/LEAP
  Summit Radio 212-213